

THE INDUSTRY'S RECOGNIZED AUTHORITY

ROCK PRODUCTS

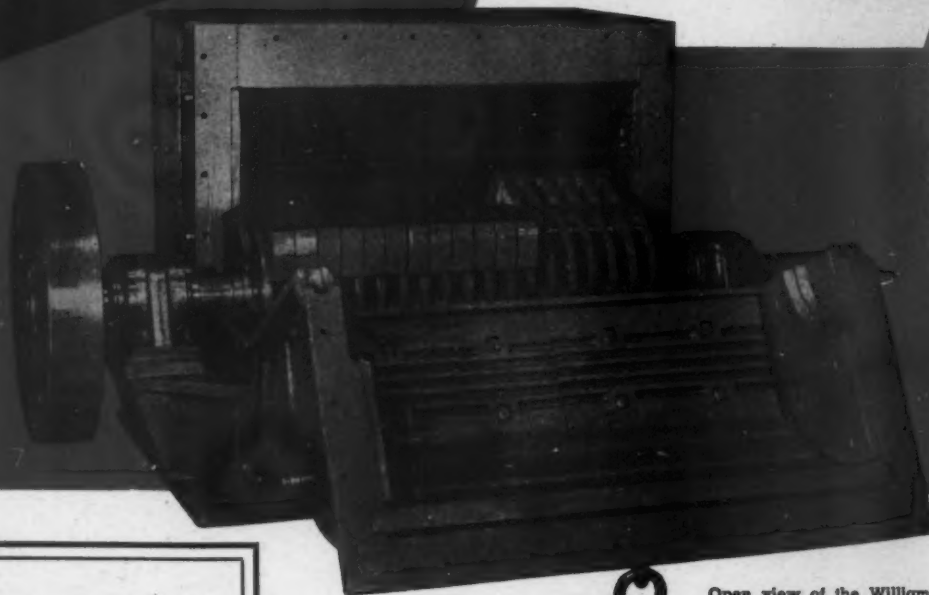
CEMENT • SAND AND GRAVEL • CRUSHED STONE • SLAG • LIME • GYPSUM
READY-MIXED CONCRETE • CONCRETE PRODUCTS • INDUSTRIAL MINERALS

MARCH 1946

**Conveying Stone for
Cement Manufacture**

**DESIGNED
ESPECIALLY FOR
AGSTONE**

**WILLIAMS
"NF" HAMMER
CRUSHER**



FEATURES OF THE "N F"

- Adjustable grinding plate.
- Hammers adjustable to overcome wear.
- Larger capacities.
- Lifetime construction.
- 2" top liners, 1" side liners.
- Easy to work on—hinged cover.

Open view of the Williams "NF" Mill showing heavy duty hammers, grinding plates, side liners and cover liners. Also shows easy accessibility to mill for repairs, etc.

The Williams "NF" Hammer Crusher was designed especially for reducing 4" or smaller stone to $\frac{3}{4}$ ", $\frac{1}{2}$ " or agricultural limestone. Embodies all the outstanding features Williams has developed in hammer mill design and construction and has proved itself an outstanding performer in the field.

The "NF" is built in a large range of sizes with capacities from 9 to 35 tons per hour when making agricultural limestone, affording a size mill for any job. Its principles of operation—a combination crushing and grinding—enables it to make agstone that meets rigid size specifications at a good margin of profit to producers.

"We appreciate your inquiries—write today for additional information—no obligation on your part."

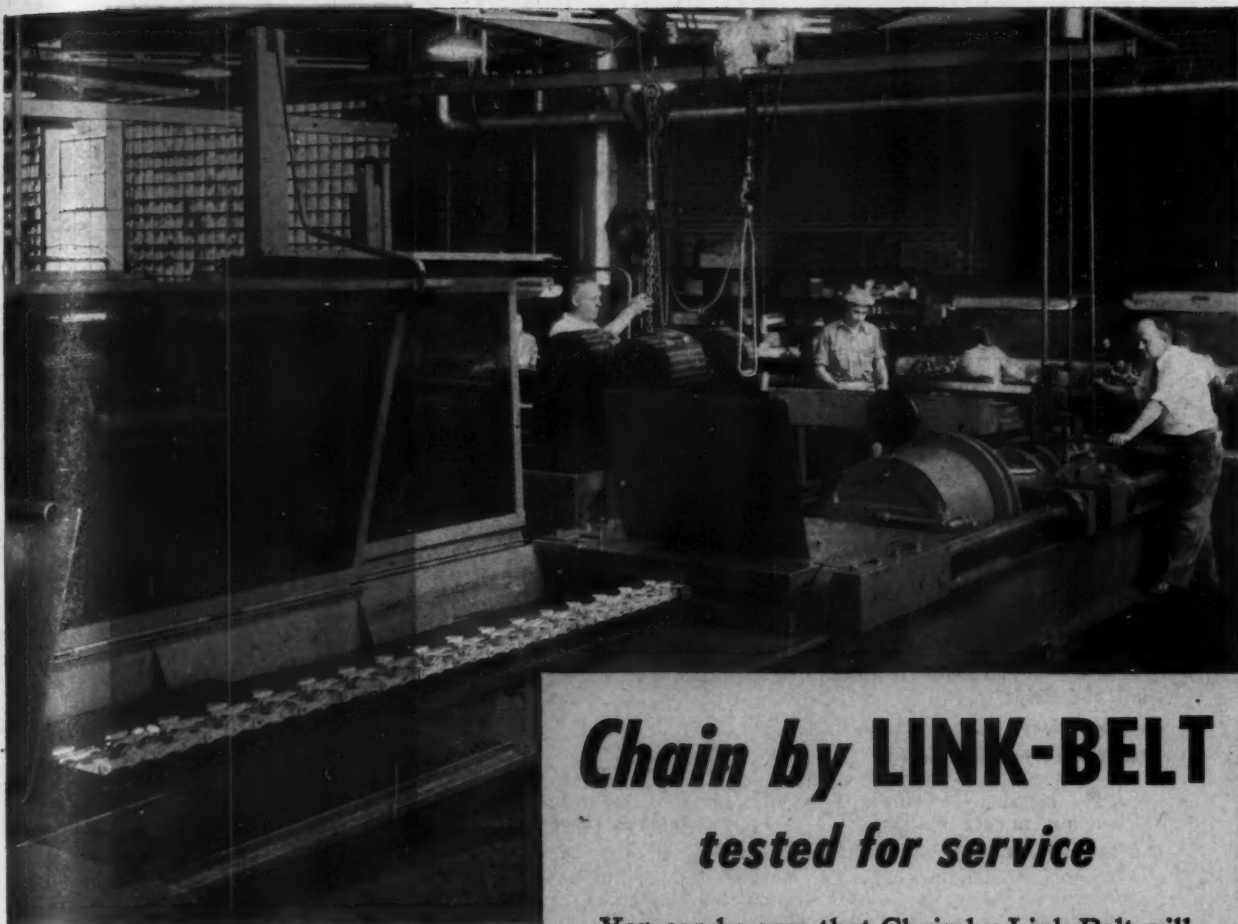
**WILLIAMS PATENT CRUSHER
& PULVERIZER COMPANY**

800 ST. LOUIS AVENUE
ST. LOUIS, MO.



REG. PAT. OFF.

Williams
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
Williams
PATENT CRUSHERS GRINDERS SHREDDERS



Chain by LINK-BELT *tested for service*

You can be sure that Chain by Link-Belt will meet every requirement of performance. Design, material, workmanship must meet rigorous operating tests before the chain is permitted to become a part of your installation. Built to the highest standard of quality . . . and tested to meet these standards . . . Chain by Link-Belt will give you trouble-free service throughout the years.

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices, Factory Branch Stores and Distributors in Principal Cities.

10, 125

"800" Class Chain for heavy duty and severe service conditions such as encountered in handling abrasive materials.



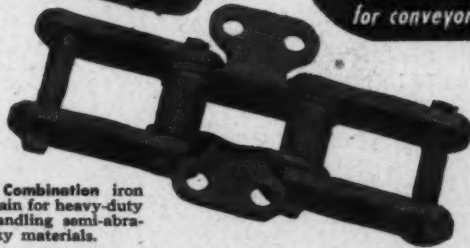
Ewart Detachable Link-Belt. A widely used chain for average service on drives, elevators and conveyors.



"55" Class Short Pitch. For medium and heavy duty drives; made with offset or straight side bars; with or without bushings or rollers.



"C" Class Combination iron and steel chain for heavy-duty elevators handling semi-abrasive or sticky materials.



LINK-BELT

CHAINS AND SPROCKETS

for conveyors • for drives • for power transmission



Silverlink Roller Chain for drives and conveyors.

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ROCK PRODUCTS is published monthly by MACLEAN-HUNTER Publishing Corporation, 309 West Jackson Blvd., Chicago 6, Illinois; Horace T. Hunter, President; John R. Thompson, Vice President; J. L. Frazier, Secretary. Copyright, 1946. Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill., post office under the act of Mar. 3, 1879.

SUBSCRIPTION INFORMATION

Subscription Price: United States and Possessions, Mexico, Cuba, Canada, \$2.00; and \$4.00 foreign countries. Twenty-five cents for single copies. Indexed in the Industrial Arts Index.

Canadian subscriptions and remittances may be sent in Canadian funds to ROCK PRODUCTS, P. O. Box 100, Terminal "A," Toronto, Canada.

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A development of
B.F. Goodrich
 FIRST IN RUBBER



He's making it swallow its own tail

A typical example of B. F. Goodrich development in rubber

FOR years, belts were a terrible headache in paper mills—as well as a lot of other places. Metal fasteners, laces and other devices were used to join the two ends of the belt and make it endless. But the belts tore loose at the joints, slipped on the drive, failed to transmit power. Then the machinery had to be stopped while a new joint was made—sometimes as often as every 10 days.

Then B. F. Goodrich engineers developed a way to make each end of the

belt a part of the other end. It's called the Plylock Belt Joint because the plies of rubber and fabric are actually locked together by overlapping, then vulcanized to make the joint permanent. The result is a joint that is 3 times stronger than metal fasteners; that will outlast them by as much as 10 times. Shut-down time for the machinery is sharply cut, production materially increased.

This is a typical result of the research and development that is always under way at B. F. Goodrich—on new prod-

ucts and old, for every industry. From tiny grommets to huge oil hose, from vibration dampeners to coal conveyor belts, no product is ever considered "standard" at B. F. Goodrich. Your supplier will be glad to work with you on any problem involving the use of rubber products by B. F. Goodrich. *The B. F. Goodrich Company, Industrial Products Division, Akron, Ohio.*

B. F. Goodrich
 RUBBER and SYNTHETIC products

Here's the **FIRST-NEW-POSTWAR**

PORTABLE AIR COMPRESSOR



... a Sullivan
of course!

BIG!

in available power
in air delivered
in bearing areas
in air storage capacity
in fuel storage capacity
in cooling capacity
in dependability

SMALL!

in length
in width
in height
in weight

Sullivan presents this modern, streamlined, sturdy and most efficient line of portable air compressors, the **NEW WK-80 SERIES**. It's the first portable air compressor to incorporate the **NEW** materials and efficiency-producing mechanical improvements developed during the war. You have never seen so much air-power, efficiency, portability, low maintenance and reliability packed so efficiently in so little space. With Sullivan patented, direct-concentric valves, two-stage compression, streamlined air passages and the "ECONO-MISER" load control that regulates air supply to demand, the WK-80 sets new high standards of compressor efficiency. Its sturdy "Bulkhead" body construction, full force-feed lubrication, "Cascade" oil cooling and low piston speeds . . . assure lowest maintenance. Add to all these features its minimum over-

all dimensions and you have a portable compressor that's as modern as this minute — one that will give you real pride of ownership. The new Sullivan WK-80 is offered in many different sizes, types and mountings. Get all the facts from your nearest Sullivan distributor or branch office. Ask for bulletin A-55, Sullivan Machinery Company, Michigan City, Indiana and Dundas, Ontario.

**RUGGED, COMPACT
REALLY PORTABLE!**



SULLIVAN

THE WORLD'S MOST MODERN PORTABLE COMPRESSED AIR PLANT

75 Years Young

Upson-Walton, the only company in the United States which combines the manufacture of wire rope, wire rope fittings and tackle blocks, celebrates its 75th birthday this month.

By all standards, except spirit, ours is an old company. But spirit keeps us young so that, at 75, we look ahead...not back...to more mature development.

At 71, we built the newest wire rope mill in the country.

In our 73rd and 74th years we made more engineering improvements in the Upson-Walton line than had been made for 20 years previously.

Now, at the ripe young age of 75 we enter the prime of our corporate life, confident that our years of greatest usefulness are still ahead. And that, more and more, a reconverting America will find that the improved Upson-Walton products are really better products.

The Upson-Walton Company

MANUFACTURERS OF WIRE ROPE. WIRE ROPE FITTINGS AND TACKLE BLOCKS

NEW YORK • PITTSBURGH • CLEVELAND • CHICAGO



Now Available . . . Wire Countered Primacord

For extra deep, well-drilled holes we recommend Primacord-Bickford Wire Countered Detonating Fuse. It is made with a brass wire binding covered with cotton yarn and wax coating. This wire countering increases the tensile strength of Primacord to 220 pounds, and also makes it more resistant to abrasion. It weighs only 35 pounds per thousand feet: packed on wooden spools it is easy to handle in the field . . . ideal for use where the going is tough.

Primacord-Bickford Detonating Fuse is made in two other standard types: Plain Primacord, for shallow holes, and for all surface trunk lines; Reinforced for deep holes where tensile strength is needed.

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONNECTICUT

PRIMACORD-BICKFORD



IT'S THE TRUTH!

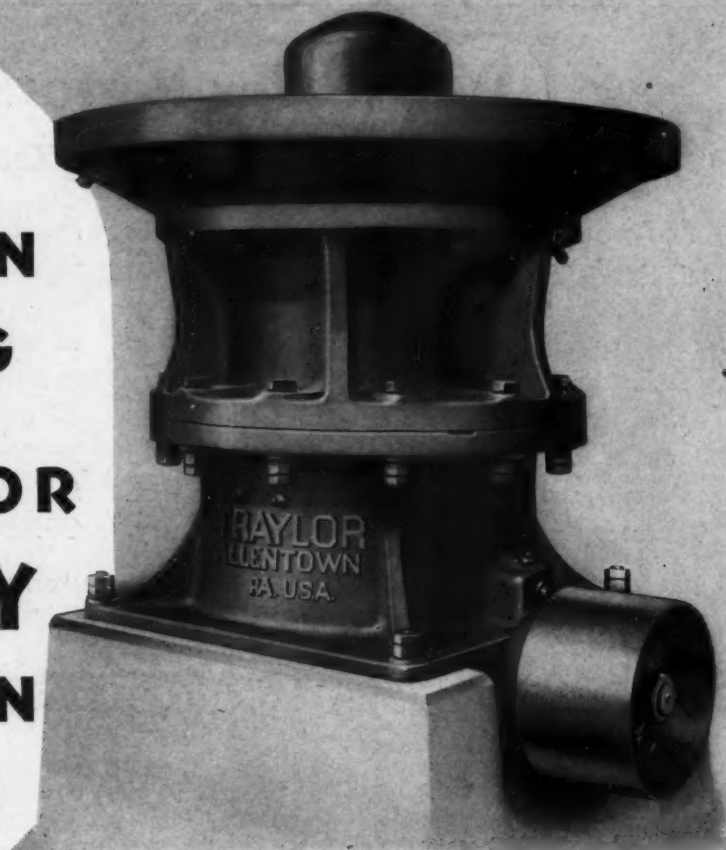
Primacord has developed a new technique in blasting.

Also
ENSIGN-BICKFORD
SAFETY FUSE
Since 1836

P-16

Detonating • Fuse •

**FOR
BETTER
REDUCTION
CRUSHING
•
THE TRAYLOR
TYPE TY
REDUCTION
CRUSHER**



WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

It has the four functions that completely satisfy operators:—

1. Delivers the exact kind of product required, in the right capacity desired.
2. Is strong enough to stand up under its job.
3. Gets the ultimate value from wearing metal, is inexpensive to maintain otherwise, is economical in the use of power.
4. Is foolproof.

Hundreds of operators—in this and many foreign countries—working in all kinds of rock and ore, have ordered and used this crusher. Many have reordered. The evidence of satisfaction on the part of these operators is, we feel, conclusive proof that the Type TY has everything that crusher men want.

It is to your advantage to get acquainted with the TY Crusher.

Ask our representative to call or write for

Bulletin No. 3112

TRAYLOR
ENGINEERING & MANUFACTURING CO.
MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.

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You're **OK** for Performance and Profits when you **TRAXCAVATE!**

IF you like to match performance records with cost records, you'll approve of TRAXCAVATORS. These versatile machines strip overburden, load blasted rock or sand from the pits, dig big loads with ease, carry them where needed and dump them into trucks, cars, hoppers or stockpiles — and do many other material handling jobs with greater time-saving, cost-cutting efficiency.

Perhaps TRAXCAVATORS can help solve manpower and production problems in your pit, quarry or plant. There is a wide choice of models with bucket capacities from $\frac{1}{2}$ to $2\frac{1}{2}$ cubic yards — Traxcavators to meet all of your requirements. Talk with your TRACKSON-“Caterpillar” dealer, or write for the complete story to TRACKSON COMPANY, Dept. RP-36, Milwaukee 1, Wis.

Two Model T4 TRAXCAVATORS loading shot limestone in an underground quarry in Illinois.






DIGS
GRADES

TRAXCAVATOR

REG. U. S. PAT. OFF.

THE ORIGINAL TRACTOR EXCAVATOR



LOADS
CARRIES

3 BIG REASONS

why "MORE YARDS ARE MOVED ON

GOODYEAR

OFF-THE-ROAD TIRES

THAN ON
ANY OTHER KIND"

1 SURE-GRIP EARTH MOVER

for SUPER TRACTION on
drive wheels

2 ALL-WEATHER EARTH MOVER

SURE ROLL — for drawn
vehicles and general
purpose traction

3 HARD ROCK LUG

SUPER ARMORED — for all
rough and rugged rock work

BUY and SPECIFY GOODYEAR — it pays!

Sure-Grip, All-Weather—T.M.'s The Goodyear T. & R. Co.

For Money In Your Pocket PERFORMANCE

Resists Kinking

Being free from internal stress, it is always easy to handle—never fights back.



Spools Better

Even with a light load, it spools uniformly—is never cranky.



Takes Reverse Bends

Takes this "fatigue" much better, as on rope-ruining elevator installations.



Safer to Handle

Worn union-formed ropes handle as safely as new, as broken outer wires lie close to rope.

Always Relaxed

While it is flexible, and pliant, it has the "toughness" to withstand strain and weight.

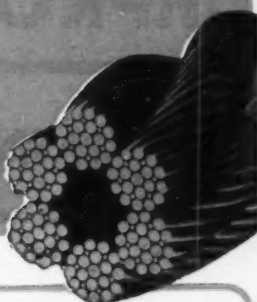


Behaves on Grooves

Resists rotating or twisting in sheave grooves because wires are Preformed.



Specify



union-formed (preformed)

THE ULTIMATE IN LOW COST WIRE ROPE

Precision Constructed to **OUTPERFORM** ordinary Wire Rope

FIGHT! FIGHT! There is an exhausting fight going on all the time in ordinary wire rope. Each wire is fighting constantly to get out of the fixed position into which it is forced without any preliminary training to put it in shape. This internal fighting spoils the performance, cuts it short, doesn't give you a run for your money.

In **union-formed** Wire Rope each wire is put in shape (**Preformed**) before it ever touches another wire in the rope. The result is exactly the same that comes from a set of conditioned muscles, i. e. finer coordination, greater endurance, top-flight kind of performance that does not let you feel out-of-pocket.

Yes sir! You will always get the most out of the best. The little extra you invest for the best is the part of your investment which will bring the payoff—yield the most dividends. Prove this fact to your own satisfaction. **Specify union-formed**—get money-in-your-pocket performance.



union Wire Rope

UNION WIRE ROPE CORPORATION

2156 Manchester Avenue Kansas City 3, Missouri
Tulsa 3 Houston 11 Chicago 6 Salt Lake City 13 New Orleans 16
Monahans, Tex. Portland 10, Ore. Ashland, Ky. Atlanta 1

NEW CHALLENGE Confronts Road Builders

The first challenge came in 1919—first full year after first World War.

That year Americans en masse decided that the automobile was more than a pleasure vehicle—that it was a necessity—the means of transporting them to horizons of greater freedom.

That year we had 6 million automobiles—virtually no surfaced roads. Oregon passed the first gasoline tax law. The Federal Government paid out nearly 3 million dollars to help pay for state road systems.

All states acquired highway departments and passed gasoline tax laws. Planned road building got under way. Road builders met the challenge—got us out of the mud. In ten years we had 23 million motor cars—the life of Americans was transformed—became mobile.

Then, in a 7-year period more than a half billion dollars of state highway funds were diverted for such things as the dole—enough to build 20,000 miles of highway.

New construction was cut deeply. Stymied highway departments lost initiative. Shrunk road building organizations were further drained by the draft and war traffic took a terrific road toll.

But not until war stopped production, did people stop buying cars to boost the total to 33 million.

The first full year after World War II finds us with three-fourths of our roads alternately dust or mud, while in urban areas we're driving bumper to bumper at a pace not much faster than in the old horse and buggy days.

Up To Road Builders To Start One of Nation's Largest Industries On The Move Again

A half billion round Federal dollars are earmarked but can't roll into roads until State, County and Municipal plans are completed and legislative bodies vote matching funds.

Every American has a stake in road building. A seventh of all workers have a big stake because their livelihood depends upon it.

All America now looks to State, County and Municipal highway and street departments to enlarge their professional organizations to speed up plans; to legislative bodies to provide undivertible revenue to match Federal funds; to the raw materials producers to expand output; to the makers of machinery for more and better equipment and to the road contractors to mobilize greater forces and efficient equipment.

This Is The Challenge of 1946. To meet it calls for the **Active Cooperation** of every profession and industry having a part in road building. Let's meet that challenge head on.

IN YOUR IMPROVEMENTS AND PUT THESE KENNEDY FEATURES

KVS

KILNS

COOLERS

DRYERS

CRUSHERS

HAMMERMILLS

SCREENS

FEEDERS

CONVEYORS

ELEVATORS

GRINDING MILLS

CLASSIFIERS

WASHERS

DUST COLLECTORS

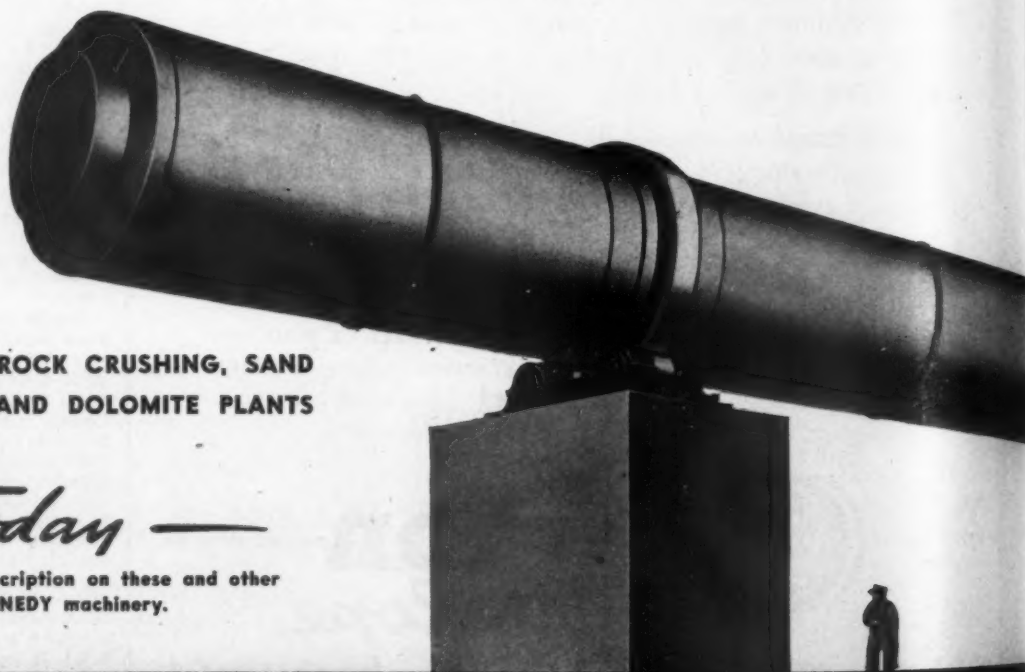
AIR SEPARATORS



KENNEDY VIBRATING SCREENS

1. Give positive action on the screen cloth without transmitting vibration to supporting members.
2. Are made in two types and several sizes, to meet any screening requirements.
3. Use a principle of vibration that permits lower speeds for large sizes and higher speeds for small sizes.
4. Material is continually turned over when passing along the screen to give efficiency approximating 95%.

These and other advantages embodied in the construction of Kennedy Vibrating Screens assure long, low-cost service when you standardize on Kennedy.



COMPLETE CEMENT, ROCK CRUSHING, SAND
AND GRAVEL, LIME AND DOLOMITE PLANTS

Write Today —

for our catalog and description on these and other
types of KENNEDY machinery.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

EXPANSIONS

TO WORK

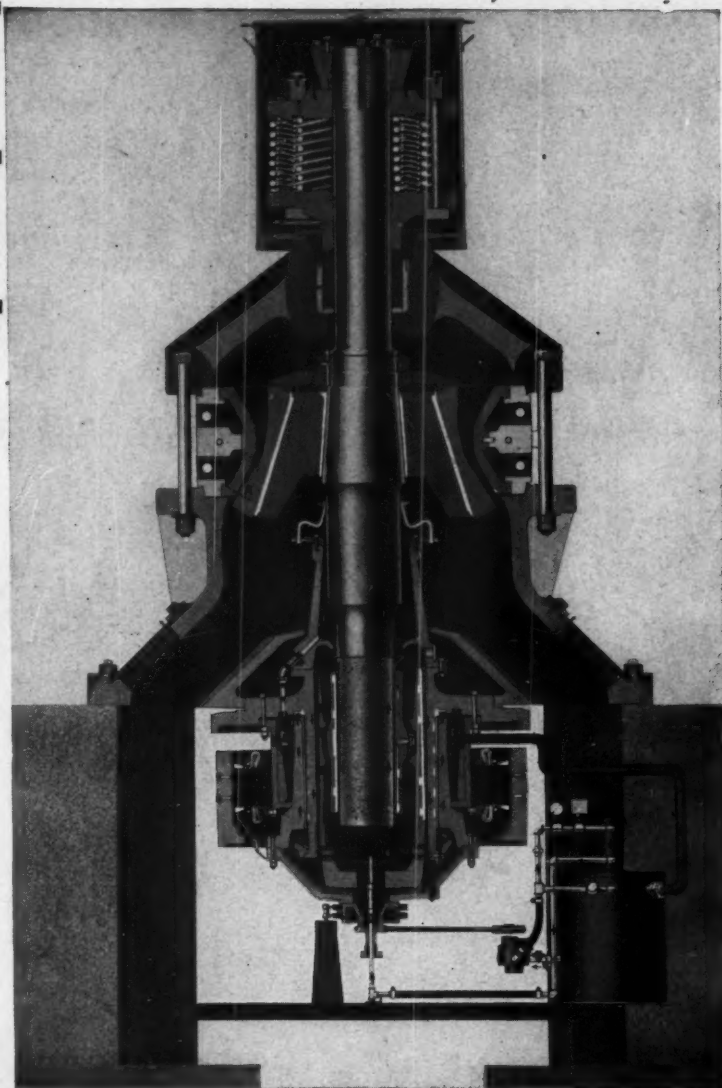
KENNEDY BALL BEARING GEARLESS CRUSHERS

Here is the gyratory crusher which, through a complete unitized design, cuts maintenance costs up to 80% and power requirements in half.

The key to their greater efficiency is in the motor drive assembly which is built in the crusher pulley. A 250% starting torque and a 300% pullout torque enables starting when the crusher is full of stone. The motor, being built in the pulley, adds additional weight to the pulley, and the pulley in turn acts like a fly-wheel by building up kinetic energy and assisting the motor over the peaks.

This simple, direct and positive application is available in a short shaft standard crusher for primary reduction and in a low head type for fine reduction. Both feature force feed lubrication, as shown in red in the illustration at the right.

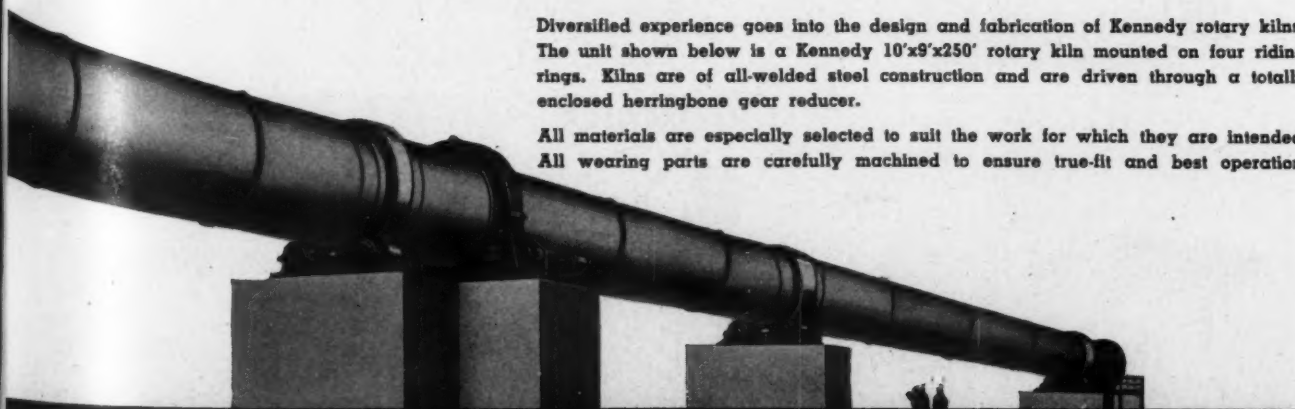
For more tonnage per horsepower make your next crusher a Kennedy.



KENNEDY ROTARY KILNS

Diversified experience goes into the design and fabrication of Kennedy rotary kilns. The unit shown below is a Kennedy 10'x9'x250' rotary kiln mounted on four riding rings. Kilns are of all-welded steel construction and are driven through a totally enclosed herringbone gear reducer.

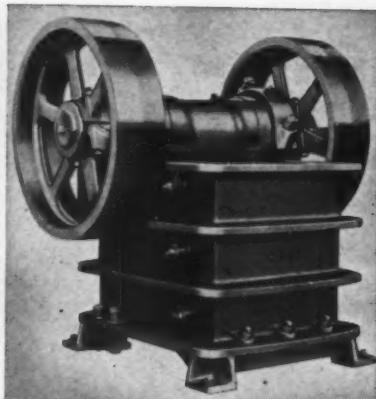
All materials are especially selected to suit the work for which they are intended. All wearing parts are carefully machined to ensure true-fit and best operation.



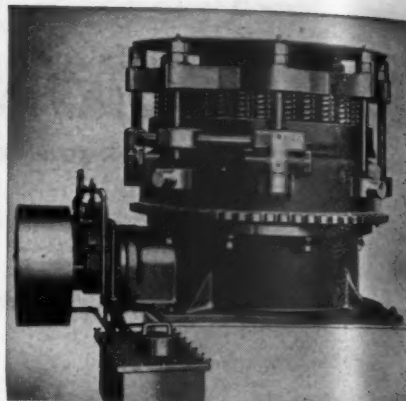
2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.



GYRATORY BREAKERS



JAW CRUSHERS

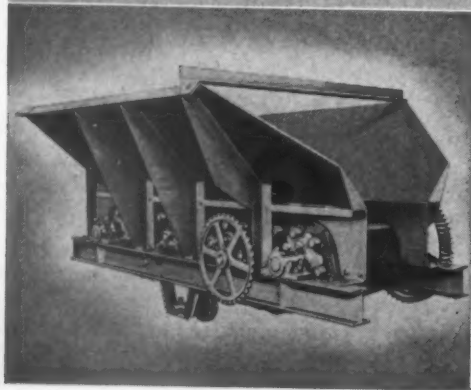


GYRASPHERE CRUSHERS

TELSMITH

for **GRAVEL PLANTS,
QUARRIES
AND MINES...**

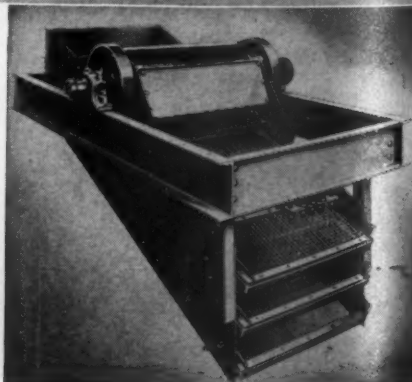
FEEDERS

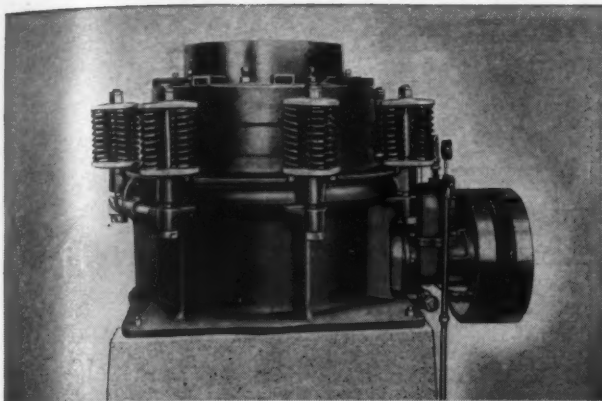


ELEVATORS

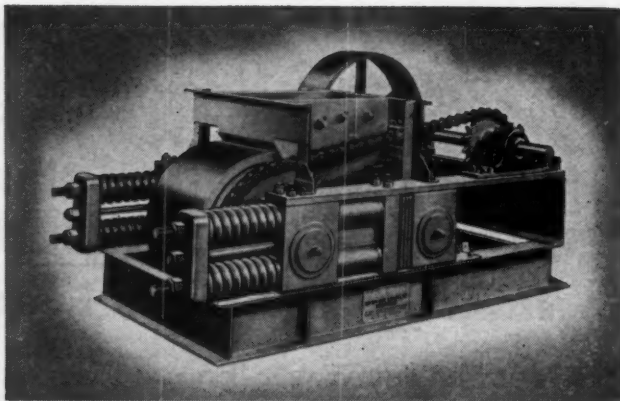


SCREENS





INTERCONE CRUSHERS



ROLL CRUSHERS

EQUIPMENT

Telsmith engineers design and build *all types of crushers and an equally wide and varied line of equipment for feeding... screening... washing... classifying... sizing... conveying... loading... in a complete range of models and sizes.*

Thus Telsmith engineers can recommend *without bias or prejudice the equipment best suited to your conditions or needs!*

Every piece of Telsmith equipment is designed and built to operate

with equally high efficiency... as a single unit, or as a part of the production line in a plant or process.

Ruggedly built... for heavy and continuous duty. Every modern feature of design... for greater capacity... extra flexibility... lowest upkeep. Telsmith equipment will give you finer sizing... improved products... and cut your costs!

Consult Telsmith engineers; get Bulletin E-11.

ES-1

SMITH ENGINEERING WORKS, 508 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London

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New York 17, N. Y.
Brandeis M & S. Co.
Louisville 8, Ky.

211 W. Wacker Drive
Chicago 6, Ill.

Rish Equipment Co.
Charleston 22, & Clarksburg, W. Va.

713 Commercial Trust Bldg.
Philadelphia 2, Pa.

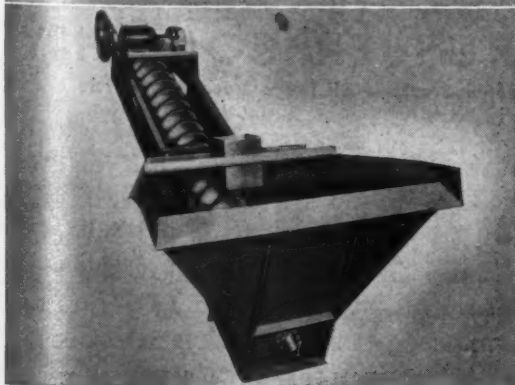
Rish Equipment Co.
Roanoke 7, & Richmond 10, Va.

247 Third Street
Cambridge 42, Mass.

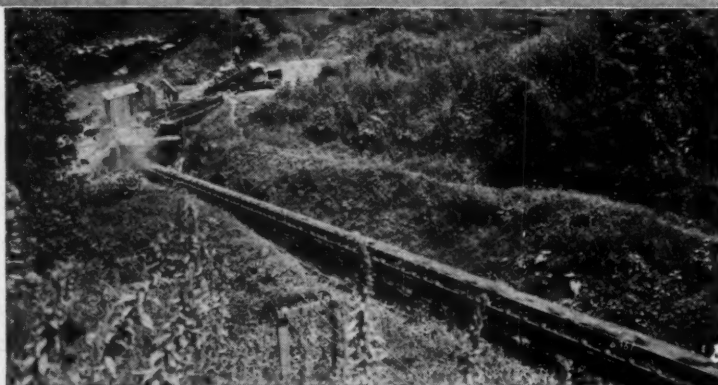
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Milwaukee 3, Wis.
North Carolina Eqt. Co.
Raleigh and Charlotte 1, N.C.

Mines Eng. & Eqt. Co.
San Francisco 4—Los Angeles 14
Wilson-Weener-Wilkinson Co.
Knoxville 8, & Nashville 6, Tenn

CLASSIFIERS



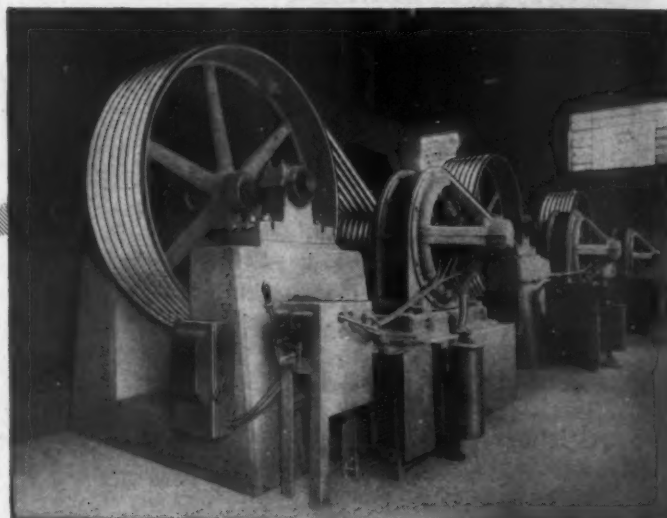
CONVEYORS



Here is WHY

**Your STANDARD Gates Vulco Ropes
Are Today Giving BETTER SERVICE
Than ANY V-Belts Ever Built Before!**

EARLY IN THE WAR, it became perfectly clear that Army tanks, tractors and self-propelled big guns in *combat service* simply *had* to have V-Belts of greater strength and durability than had ever been built before. Gates developed these greatly superior V-Belts through intensified, specialized research — and here is why this fact is now important to YOU: —



✓ **Every Improvement** developed by Gates for these Army V-Belts has also been added, day by day, to the quality of the Standard Gates Vulco Ropes which have been delivered to you.

**All Gates V-Belts
are Built with**

The Patented



This is one of the very few instances in which improvements developed primarily for military use could be passed on immediately to you. Ordinarily, you would have had to wait. An exception was made in the case of Gates V-Belts because it was recognized that industry needed the best possible V-Belts in order to achieve the greatest possible production — and maximum production was vitally essential.

That is why Gates has been able to pass on to you, day by day, every V-Belt improvement developed for our armed forces during the war — and that is why your *Standard Gates Vulco Ropes* are today delivering far better service than *any* V-Belts ever built before!



THE MARK OF
SPECIALIZED RESEARCH

THE GATES RUBBER COMPANY

Engineering Offices and Jobber Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

CHICAGO 6, ILL., 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue. ATLANTA 3, GA., 521 C. & S. Nat'l Bank Bldg.
LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway. DETROIT 2, MICH. 223 Boulevard Bldg.
PORTLAND 9, ORE., 333 N.W. 5th Ave. DALLAS 2, TEXAS, 1710 N. Market St. SAN FRANCISCO 3, CAL., 170 Ninth St.



FOR ALL SHIPPERS—the Union Pacific Railroad provides . . .

A Strategic Middle Route that unites the East with the Mid-West, Inter-mountain and all Pacific Coast states.

Modern operating facilities, equipment and motive power include the famous "Big Boys," super-powered locomotives designed to meet industry's heaviest demands.

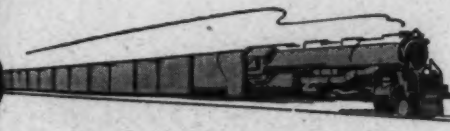
Union Pacific also has long been renowned for its well-ballasted steel highway, specially constructed for

smooth, safe operation of freight traffic at high speed.

General agency offices are located in metropolitan cities, coast to coast, with a staff of experienced traffic men trained to assist you and other shippers in effectively meeting your transportation problems.

For dependable, on-the-job freight service—

*Be Specific—
say "Union Pacific"*



★ Union Pacific will, upon request, furnish information about available industrial and mercantile sites in the territory it serves. Address Union Pacific Railroad, Omaha, Nebraska.

The Progressive

UNION PACIFIC RAILROAD

The Strategic Middle Route

Claims Are More Than Claims, They're Backed By Proof Like This

Here are some of the claims we make for MISSISSIPPI WAGONS

Check each of these statements against the owner report opposite . . . one of the many we have received testifying to the economy and versatility of Mississippi Wagons. Performance records like this are your guarantee that Mississippi Wagons have what it takes to handle your hauling jobs, at costs that will assure you of maximum profits.

1. Since the tractor is not subjected to the pounding and surging of the loaded trailer, a minimum of repairs are necessary during the life of the unit, resulting in more actual operating hours per month or year and in greatly decreased repair expense.
2. Repair parts are low in cost. The list price of all gears, bearings and shafts in the five-speed transmission is only \$188.99; of all wearing parts in the rear axle and differential, only \$315.95.
3. Short or long hauls, on or off the highway—it's all the same to versatile Mississippi Wagons.
4. The Mississippi Wagon is the only bottom-dump unit powered by a long-life industrial tractor that can haul payloads of 27,000 pounds over highways without exceeding the 18,000-pound axle-loading limit set by most state laws.
5. Mississippi Wagons provide greater flotation than semi-trailer units of the same capacity and will therefore travel over spongier ground. For the same reason, they will travel over black-top and other types of pavement without damage to the road surface.

M-R-S MANUFACTURING COMPANY, Jackson, Mississippi



Plans, When
ke this!

Write us, or consult your nearest distributor, for full information on Mississippi Wagons and recommendations as to which type or types will serve you most profitably.

E. R. MORRIS

H. M. YOUNG, JR.

MORRIS & YOUNG

CONTRACTORS

La. Nat'l. Bank Bldg.

BATON ROUGE, LA.

September 12, 1945

Dunham-Pugh Company
Baton Rouge, Louisiana

Gentlemen:

I am pleased to give you the information requested on the four Mississippi Wagons we purchased from you on July 11, 1944.

During the first fourteen months we have owned these four Mississippi Wagons we have operated them approximately 3490 hours per unit with a repair parts bill of \$1099.87 on the tractors and \$181.65 on the trailers—a total of \$1281.52 for the four units, or \$320.38 for each unit.

In other words, our repair parts costs have been 9 and 18/100 cents an hour per unit, and the units are still in good operating condition, using about the same amount of fuel and oil they have always used.

During this fourteen months we have hauled the following quantities of material for the distances shown:

240,000 yards of dirt	average haul 1/2 mile
42,000 yards of gravel	average haul 8 miles
23,000 yards of gravel	average haul 10 miles
18,000 yards of shell	average haul 5 miles

We are now back on our dirt job at Lottis, Louisiana, finishing it up. Last winter's rains made it necessary for us to leave it as the ground conditions were quite bad, since the water level is only five feet underground on the job site.

It was very pleasing to us to have hauling equipment that permitted our taking contracts for gravel and shell hauling during those winter months, instead of having to scatter our organization and let our equipment stand idle.

In addition to their low maintenance cost and their suitability for both on or off the highway use, we are very pleased with the ability of our Mississippi Wagons to work under soft ground conditions, and with their ease of handling, operator comfort and simplicity.

I trust the above gives you all of the information requested.

Very truly yours,

MORRIS & YOUNG, CONTRACTORS

E. R. Morris

E. R. Morris

ERM/J

MISSISSIPPI WAGON

The World's Most Modern Hauling Unit

Maybe we've been too Modest

ABOUT BEMIS MULTIWALL PAPER SHIPPING SACK FACILITIES

For years, Bemis has been a leading manufacturer of multiwall paper shipping sacks. Six plants, strategically located north, south, east, and west, have given Bemis customers in the cement industry the advantages of flexibility and capacity in production.

Even in the face of manufacturing and shipping difficulties during the past few years, this flexibility and capacity, plus the Bemis system of planned production, has enabled us to make an unusual record in fulfilling shipping promises and in maintaining quality for our regular multiwall customers.

When you need multiwall paper shipping sacks for your rock products, think of Bemis. It pays to be a Bemis Multiwall Paper Shipping Sack customer.



Peoria, Ill.



East Pepperell, Mass.



Mobile, Ala.



San Francisco, Calif.



Wilmington, Calif.



St. Helens, Ore.

Bemis Multiwall Paper Shipping Sacks

6 PLANTS

Peoria, Ill.

East Pepperell, Mass.

Mobile, Ala.

San Francisco, Calif.

Wilmington, Calif.

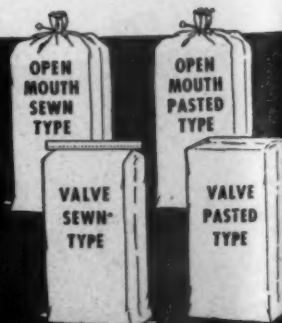
St. Helens, Ore.

BEMIS BRO. BAG CO.

OFFICES: Baltimore • Boston • Brooklyn
Buffalo • Charlotte • Chicago • Denver
Detroit • East Pepperell • Houston • Indian-
apolis • Kansas City • Los Angeles • Louis-
ville • Memphis • Minneapolis • Mobile



New Orleans • New York City • Norfolk
Oklahoma City • Omaha • Orlando
Peoria • St. Helens, Ore. • St. Louis • Salina
Salt Lake City • San Francisco • Seattle
Wichita • Wilmington, Calif.



BELTS THAT CAN TAKE IT—*Republic*

Severe conveyor service—pounding, cutting, abrasive action of heavy, sharp rock materials—will beat up any belt in time. Thus, the test of belt quality has to be on the basis of comparison. Republic conveyor belts, operating under similar conditions with other belts in the stone products industry, have repeatedly demonstrated superior resistance to both abnormal and normal service abuse. The difference is in impact-absorbing, resilience-retaining properties established in the belt design by Republic technologists and put into the actual construction by the skilled hands of Republic workmen. Order from your Republic Distributor.



REPUBLIC RUBBER

DIVISION

LEE RUBBER & TIRE CORPORATION

YOUNGSTOWN, OHIO

REPUBLIC INDUSTRIAL PRODUCTS
YOUNGSTOWN, O.



LEE DELUXE TIRES AND TUBES
CONSHOHOCKEN, PA.

WE ARE
PARTICIPANTS IN THE
OWNERSHIP AND OPERATION
OF
NATIONAL SYNTHETIC RUBBER
CORPORATION

aluminum

**READY TO FABRICATE
SURPLUS**

AT 15% TO 45% LESS

(FOB Location)

GOVERNMENT-OWNED STOCK

Here—in production quantities—is the aluminum you need at fixed prices, 15% to 45% off current mill prices, depending on the particular alloy. Much of this special value stock, originally ordered for war plane construction, is still in its original packing. It may be readily fabricated and is available in standard sizes and shapes. Perhaps this material is just what you need to get into full civilian production faster and it costs nothing to find out. Take these three simple steps today:

1. Estimate, for any convenient period, your production needs in each specification, finish, gauge, etc.
2. Then write, wire, or phone that data to your nearest War Assets Corporation office* below. We will advise you of the location of the stock you need, estimate possible delivery dates, quote prices and help arrange credit where indicated.
3. When satisfactory arrangements have been made, we will start shipments.

* NEW SURPLUS STOCK RELEASED DAILY

War Assets Corporation is a Reconstruction Finance Corporation subsidiary in charge of disposing of surplus war materials constantly being released to War Assets Corporation. To reach War Assets Corporation, simply contact your nearest R.F.C. office listed below.

VETERANS OF WORLD WAR II:

To help you in purchasing surplus property from War Assets Corporation, a veterans' unit has been established in each War Assets Corporation Regional Office listed below.

ATTENTION

POWDER

METALLURGISTS!

Atomized Aluminum powder—not suitable for paint without further processing—is available in enormous quantities at 10¢ per pound. Can you find a major use for this product? If you can...!!! Get detailed specifications from your War Assets Corporation office listed below.



TYPES AVAILABLE



A DISPOSAL AGENCY DESIGNATED BY THE SURPLUS PROPERTY ADMINISTRATION for Surplus Producers' and Capital Goods. Aircraft and Plants formerly handled by Reconstruction Finance Corporation and for Surplus Consumer Goods formerly handled by United States Department of Commerce.

WAR ASSETS CORPORATION

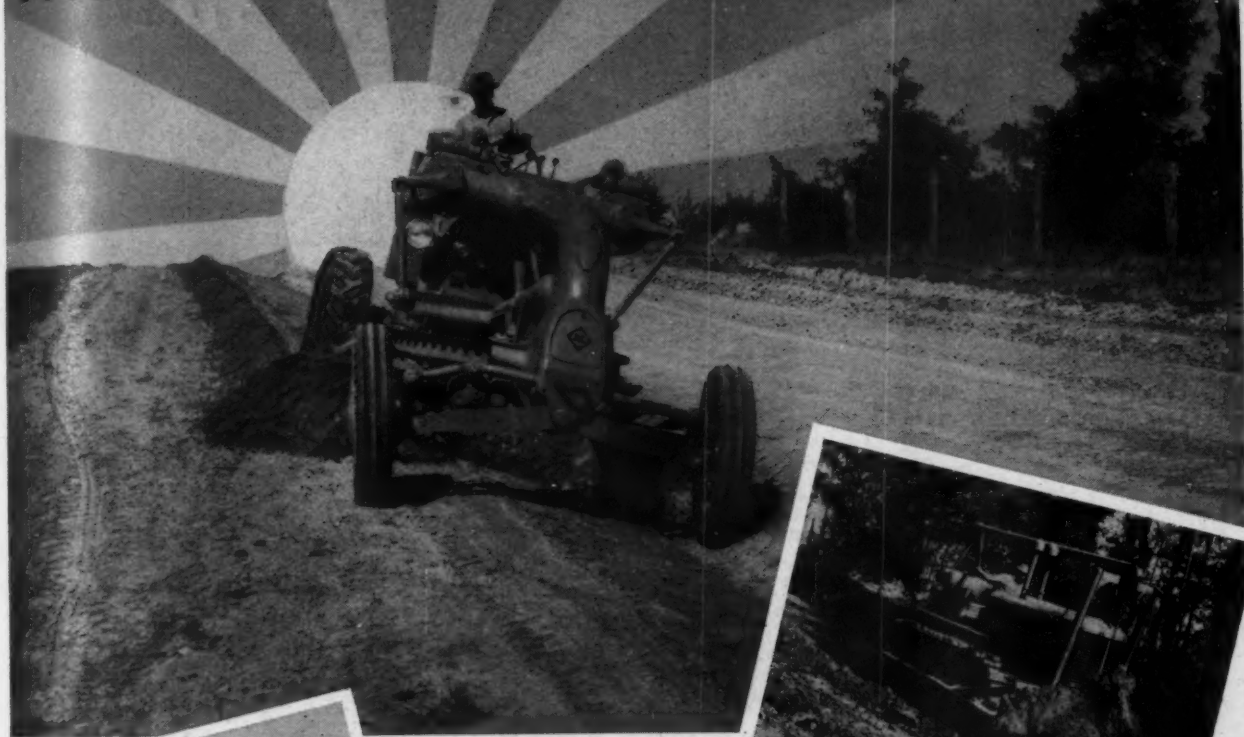
(A SUBSIDIARY OF RECONSTRUCTION FINANCE CORPORATION)

RFC OFFICES (INCLUDING FORMER DEPARTMENT OF COMMERCE REGIONAL SURPLUS PROPERTY OFFICES) LOCATED AT: Atlantic • Boston • Chicago • Denver • Kansas City, Mo. • New York • Philadelphia • San Francisco • Seattle • OTHER RPC SURPLUS PROPERTY OFFICES LOCATED AT: Birmingham • Charlotte • Cleveland • Dallas • Detroit • Helena • Houston • Jacksonville • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • Oklahoma City • Omaha • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • Spokane • OTHER FORMER DEPARTMENT OF COMMERCE REGIONAL SURPLUS PROPERTY OFFICES LOCATED AT: Cincinnati and Fort Worth

157-3

a NEW DAY for Construction

... IN THE ALLIS-CHALMERS 1946 LINE-UP OF EQUIPMENT*



MODEL A-D MOTOR GRADER

— 75 Diesel h.p. engine . . .
more traction, more clearance
. . . a full range of blade positions
for handling complete
grading — slopes, ditches,
surface.

2-CYCLE DIESEL TRACTORS

— now a choice of four models, ranging from 60
to 132 drawbar h.p. — HD-7, HD-10, HD-14,
HD-14C (Torque Converter Tractor) — with matched
allied equipment — cable and hydraulic bulldozers
and scrapers . . . snow plows, winches, sheepfoot
rollers, rippers.

MODEL W-SPEED PATROL

— for light maintenance and construction
. . . performs at fraction of usual grading
cost—low original cost, low operating cost.

**Up-to-the-minute in design!
Modern in performance!**

**A new high in productivity . .
a new ease in operation . .
a new low in grading cost.**

**It's a New Day for
construction men . . .
with Allis-Chalmers power!**

* MORE MACHINES ARE TO BE
ADDED . . . *Watch for Announcements!*

POWER UNITS

— for driving crushers, conveyors, compressors,
screens, shovels, draglines, pumps and
other equipment. Available with various accessories
to fit the application. 5 sizes.
Choice of fuels.

MODEL I-B WHEEL TRACTOR

— the ideal, economical unit for countless
pulling and pushing jobs—hauling work in
quarries, sweeping blacktop, bulldozing
loose materials.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

**15% to 35% more air per gallon
of fuel**




CP PORTABLE COMPRESSORS

AN outstanding feature of CP Portable Compressors is the gradual speed regulator. Synchronizing engine speed with air demand, it varies the speed—not by steps but gradually — up and down, exactly as air demand varies. The result is a marked economy of fuel and a reduction in wear. CP's complete line of gasoline and Diesel powered compressors offers greater portability

due to lighter, more compact construction. For full information write for Bulletin 758-2.

Chicago Pneumatic Portable Compressors are available in gasoline powered models of 60, 105, 160, 210 and 315 c.f.m.; and in Diesel powered sizes of 105, 160, 210, 315 and 500 c.f.m.; with steel wheels, pneumatic-tired wheels or skid mountings.

★★★★★★★
PNEUMATIC TOOLS
ELECTRIC TOOLS
HYDRAULIC TOOLS
ROCK DRILLS

CHICAGO PNEUMATIC
TOOL  COMPANY

General Offices: 8 East 44th Street, New York 17, N. Y.

★★★★★★★
AIR COMPRESSORS
VACUUM PUMPS
DIESEL ENGINES
AVIATION ACCESSORIES

Is your job too tough for your truck?...

No matter how little it cost when new—if your truck is not tough enough for your job *it will cost too much in the end.*

There's only one "bargain" in trucking—and that's *extra work for your money.*

This is why Mack trucks are built the way they are. It's why, for instance, Mack uses Tetrapoid rather than conventional gears—rubber Shock Insulators rather than conven-

tional spring shackles—wrist pins precision-finished to two ten-thousandths of an inch.

When you build a truck this way *it gives its owner extra work.* It stays on the job longer. It is in the repair shop *less.* It costs *less in the end.*

If your trucks give you too much trouble—if repair costs are excessive and service interruptions too frequent—then ask yourself if maybe you're not just using *too little truck for the job!*

If the answer's "Yes!"—then you need a Mack. It pays off in work on the job.



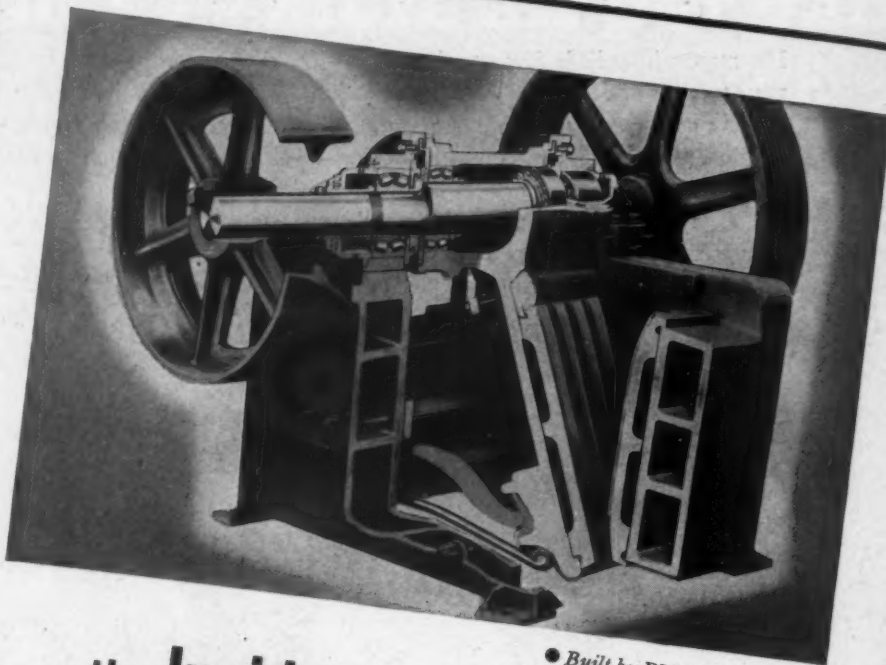
Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities including Toronto and Montreal, Canada.

Mack

TRUCKS
FOR EVERY PURPOSE



*Performance
Counts!*



● Built by PIONEER
ENG'G WORKS, INC.

the Inside story of jaw crusher performance

This ruggedly-designed Jaw Crusher's performance is a tribute to SKF Performance. On the *down* stroke, the upper part of the jaw crushes large rocks. On the *up* stroke, the lower end of the moving jaw has a reversed action and crushes small rocks. That means loads—heavy shock loads—but they don't faze SKF Spherical Roller Bearings a bit. They have rolling alignment that pre-

vents binding and loss of bearing capacity under shaft deflections due to high stresses. They need only occasional lubrication, and they are almost frictionless, even when starting under full load. Naturally, the result is *low operating costs*. Something to consider when you buy equipment for low bids on building materials.

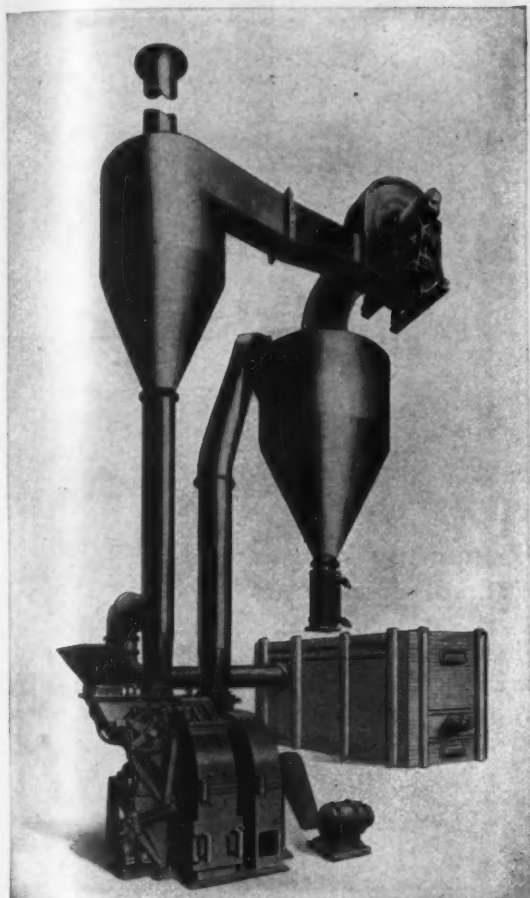
5973

SKF INDUSTRIES, INC.
Front St. & Erie Ave., Phila. 34, Pa.



SKF
Puts the
RIGHT BEARING
in the
RIGHT PLACE

You can do your *Drying-Grinding* *Operations* all in **ONE Machine**



Raymond IMP MILL with Flash Drying
System for removing moisture while
pulverizing.

■
DRYING
■
GRINDING
■
SEPARATING
■
FIRING

with the Raymond

•**IMP.** **MILL**

of 1000 Uses



Typical jobs of this versatile Imp Mill include:

Handling ball clays directly from the pits . . . reducing initial moisture of about 25% to a final content of 5% and at the same time pulverizing and separating the clay to a fineness of 95% through 100-mesh.

Processing chalk for fillers used in paint and rubber manufacture . . . drying raw material from 10% down to 2% final moisture, while grinding product to a fineness of 99% passing 100-mesh.

Calcining gypsum for making wallboard . . . handling raw gypsum containing approximately 25% surface and combined moisture, and delivering a finished product with a 5% moisture content.

For further details and applications of the Raymond Imp Mill, ask for Catalog No. 55.

RAYMOND PULVERIZER DIVISION **COMBUSTION ENGINEERING COMPANY, INC.**

1307 North Branch Street

Sales Offices in Principal Cities

Chicago 22, Illinois

Canada: Combustion Engineering Corp., Ltd., Montreal

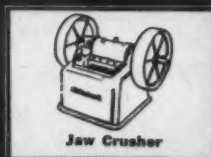
MORE FOR YOUR CRUSHING DOLLAR WITH UNIVERSAL "BASIC UNITS"



Rotovator



"Channel" Conveyor



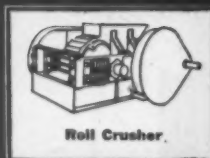
Jaw Crusher



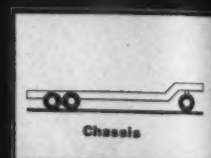
Gyrating Screen



Apron Feeder



Roll Crusher



Chassis

THE 239Q "PACEMAKER"

A Complete Dual Crusher Quarry Plant on Wheels Made From Seven Balanced Universal Basic Units

"Basic Units" are the fundamental parts (jaw and roll crushers, pulverizers, elevators, conveyors, hoppers, bins, feeders, sand drags, sand screens, settling tanks, gyrating screens, etc.) upon which all successful crushing, screening and washing depends. Universal builds over 20 "Basic Units" which offer the following advantages to producers:

1. ADD TO PRESENT EQUIPMENT

Universal "Basic Units" are soundly designed to produce top quantities of specification products, and built of the finest materials to assure long service life. They are made in sizes and types to fit into any existing set-up to increase plant efficiency and output, or to produce a different product.

2. GET A TAILORED-TO-MEASURE PLANT AT STANDARD PRICES

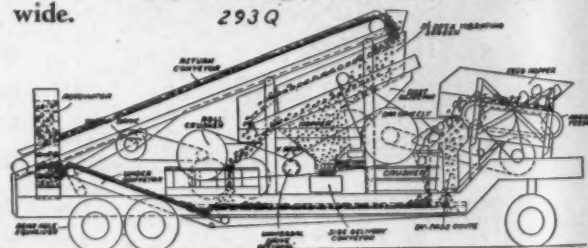
By using "Basic Units," practically "off the shelf," Universal engineers can build plants to meet any needs, thus effecting important savings in initial cost.

3. GET A COMPLETE BALANCED UNIVERSAL BUILT AND DESIGNED PLANT

Many standard plants of superior design such as the 239Q "Pacemaker" Portable Quarry Plant, shown above, are made from Universal "Basic Units." The "Pacemaker" features Universal's

exclusive Two-In-One Rolls which handle two sizes of material at one time, thus producing large capacities by permitting jaw crusher to be opened wide.

293Q



Investigate the many advantages of Universal "Basic Units" and complete plants to assure yourself of larger profits from the coming construction activity. Send for Bulletin today!

Universal Engineering Corporation

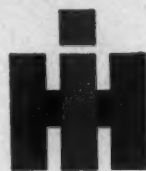
617 C Avenue West
Cedar Rapids, Iowa

FOR FORTY YEARS

UNIVERSAL

ROCK AND GRAVEL CRUSHING
AND SCREENING PLANTS
ASPHALT PLANTS • SPREADER-ROLLERS

Low-Cost POWER for High-Level PRODUCTION



In addition to the International TD-9 Diesel TracTracTor shown here, International Harvester manufactures a full line of Diesel and carburetor models and a complete line of Industrial Power Units for stationary power installations.

THE COMPACT, powerful International TD-9 Diesel TracTracTor does a large part of the job of helping to produce 900 tons of rock daily from the quarry shown above. Here is an example of high-level production with low-cost power—International Power. The rugged TD-9 is used to strip off several feet of overburden and then to pile the rock into convenient loading piles after blasting operations. It handles both jobs with maximum efficiency and economy.

That's why Internationals are becoming more and more popular for pit and quarry operations. They're designed for the *tough* jobs—and they do them with the strictest economy. Internationals are better balanced for true traction under all conditions and that means

more "push" and "pull" when you need it. Because they're engineered for the hardest kind of work, you have greater freedom from time-killing breakdowns and costly repairs. Besides, Internationals give you easy-starting, full-Diesel power—ready to go at a moment's notice.

Visit your nearest International Industrial Power distributor and let him show you why International Crawlers, with matched equipment, are the ideal answers to your power problems. He has the facts you want and need. See him now.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

LISTEN TO "HARVEST OF STARS" EVERY SUNDAY! N B C NETWORK

INTERNATIONAL Industrial Power

ROCK PRODUCTS, March, 1946

29

How

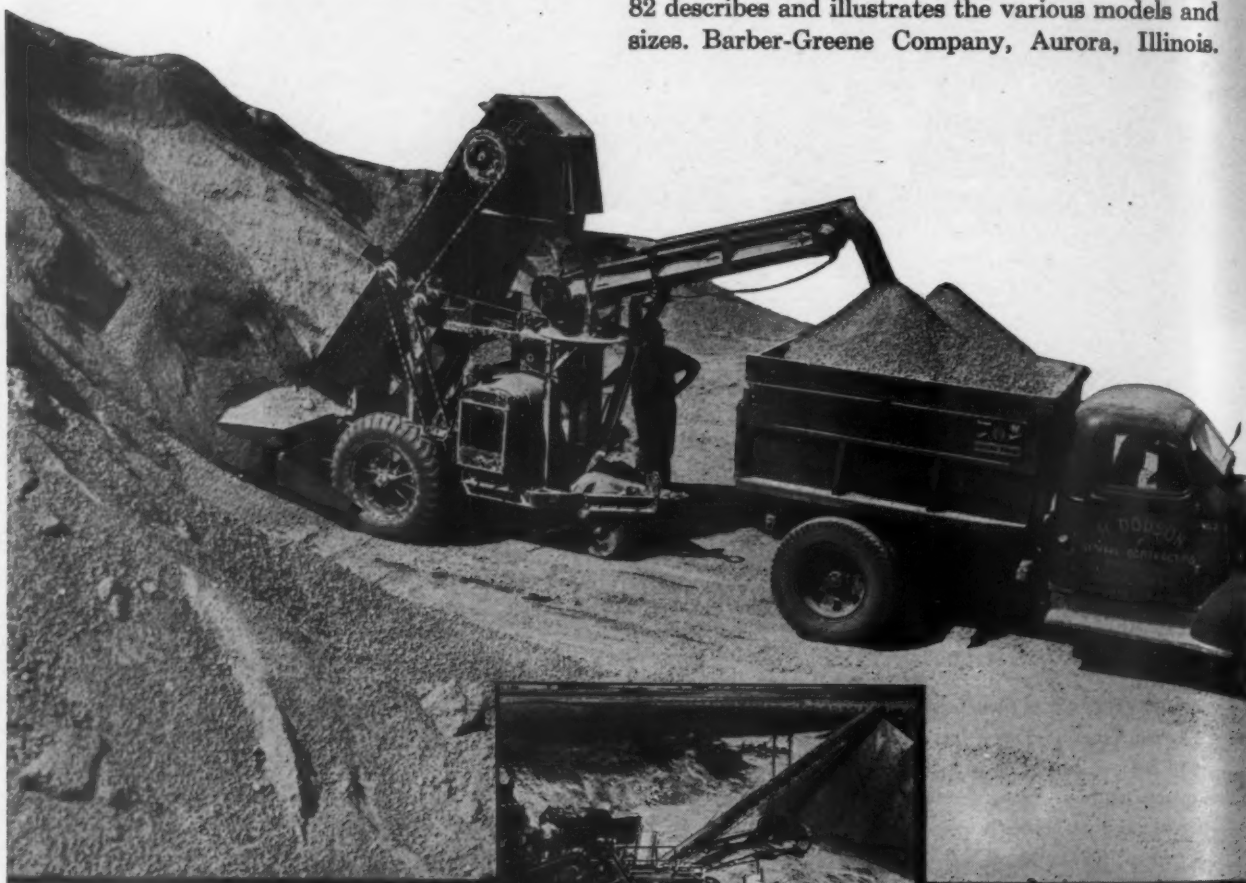
BG *Bucket Loaders*

Save Truck Time

• Saving truck loading time is the equivalent of adding trucks to your fleet. And, Barber-Greene Bucket Loaders *are* saving truck time every day through their high capacity and efficiency in loading from stock piles. They're specially designed for this job—a job no other method approaches from the standpoint of saving time.

In addition, Barber-Greene Bucket Loaders are easily maneuvered around the yard or pit, and, where conditions warrant, can be equipped with a special high travel speed for moving from stock pile to stock pile.

The Barber-Greene Bucket Loader Catalog No. 82 describes and illustrates the various models and sizes. Barber-Greene Company, Aurora, Illinois.



This B-G Portable Belt Conveyor provides a flexible storage system for bulk materials . . . builds long parallel piles or large radial stock piles.



CONSTANT FLOW EQUIPMENT



LOADERS • PERMANENT CONVEYORS • DITCHERS • PORTABLE CONVEYORS • FINISHERS • BITUMINOUS PLANTS • COAL MACHINES



Here's One Good Reason—why VULCAN CAST-STEEL SECTIONAL TIRES Always Give Dependable Service

The fact that every Vulcan Sectional Tire is completely assembled before final accurate machining is only one of many reasons why they always give good service when used to replace solid tires on a rotary kiln or dryer. Another reason is that they are always cast in circular form—the upper and lower halves being cast separately and then cut into semi-circles to make the four component parts.

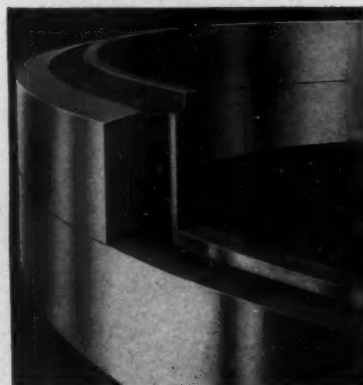
Additional reasons include slow annealing at moderate temperature, to eliminate internal strains while still retaining the necessary strength and hardness to stand up under long-continued severe service.

Naturally the first cost of a Vulcan sectional tire is more than that of an equivalent solid tire, but on most replacement jobs the saving in installation costs—plus the sav-

ing in shut-down losses—is so great that no responsible executive can afford to overlook their ultimate economies.

If you operate rotary kilns, coolers, dryers or retorts, you may easily achieve important savings by ordering Vulcan Sectional Tires NOW and having them ready to slip on before trouble actually develops.

Close-up of tongue-and-groove joints on Vulcan sectional tire shown above. Bolt holes through the tire sections are reamed for 2" fitted bolts, with hex and jam nuts, and a dowel pin is used at each of the four end-joints.



VULCAN IRON WORKS, Wilkes-Barre, Pa.

Rotary Kilns, Coolers and Dryers
Rotary Retorts, Calciners, Etc.
Improved Vertical Lime Kilns
Automatic Quick-Lime Hydrators

Toothed, Double-Roll Crushers
High-Speed Hammer-Type Pulverizers
Ball, Rod and Tube Mills
Shaking-Chute and Chain Conveyors

Heavy-Duty Electric Hoists
Self-Contained Electric Hoists
Scraper-Loading Hoists
Cast-Steel Sheaves and Gears

Steam Locomotives
Diesel and Gasoline Locomotives
Diesel-Electric Locomotives
Electric Locomotives and Larrys

Generally Speaking

March 1, 1946

Dear Reader:

Applications covering 18,764 dwelling units were received by field offices of the Federal Housing Administration during the first six working days under the new preference rating system for veterans' housing. Forty-four percent were for units to sell for less than \$7500 or to rent at less than \$60 a month.

* * * * *

Tennessee Division of Geology is about to undertake an intensive study of limestone deposits with the ultimate objective of publishing the results for the benefit of industry. Known deposits in the western valley of the Tennessee River are to be studied for their possible value in the production of agricultural limestone and in the hope of discovering some of high calcium composition for chemical use.

* * * * *

According to L. Metcalfe Walling, administrator of the Wage, Hour and Public Contracts Division, U. S. Department of Labor, appearing before the National Crushed Stone Association convention, 21,000,000 persons now come under the federal law fixing a 40-cent minimum wage, and 4,000,000 to 4,500,000 would receive some wage increase if the proposal to raise the minimum to 65 cents becomes law.

* * * * *

A company cannot stop its employees from bringing action to recover overtime pay, under the Wage-Hour Act, by having them sign a waiver of such claims in return for increased pay.

* * * * *

The Supreme Court has ruled that companies covered by the Fair Labor Standards Act must pay overtime to employees who work more than 40 hours weekly, notwithstanding union contracts to the contrary. In a recent case involving the Michigan Window Cleaning Co. it was decided that workers who spend most of their time washing windows in a building where goods are produced for interstate commerce are "engaged in the production of goods for commerce" within the meaning of the Act, and the fact that an agreement provided for overtime for work done in excess of 44 hours a week had no bearing.

* * * * *

In order to spread diminishing stocks of steel and iron, the Civilian Production Administration has ordered that no company can accumulate in a plant more than a 45 day supply.

* * * * *

It is estimated that all new construction and repair work will require 1,600,000 workers during 1946, of whom 500,000 at peak will be employed on housing projects.

* * * * *

Impregnation of plaster of paris with plastics materials represents a process which will make appreciable inroads of plastics into the ceramics field. The result means an improved plaster of paris product which has acquired the durability of the plastic without sacrificing its low price advantage, according to a recent article in Chemical and Metallurgical Engineering.

(Continued on page 35)



ROTARY KILNS

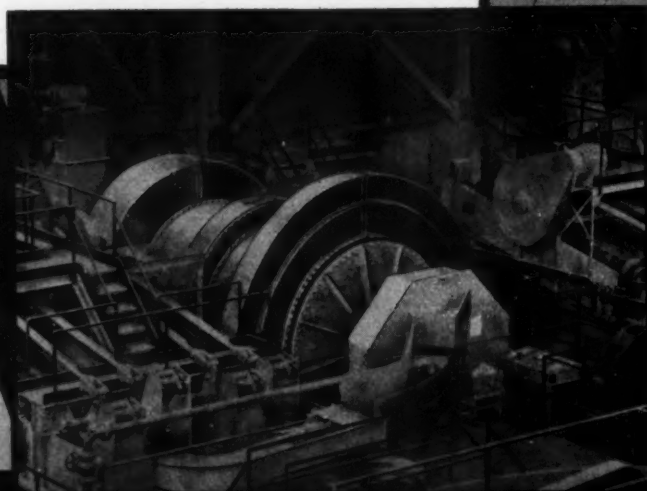
ROTARY KILNS

For sintering, nodulizing, calcining, desulphurizing and oxidizing and reducing roasting—also coolers, pre-coolers, preheaters, recuperators—and their accessories.

GRINDING MILLS

Ballmills, tubemills and multi-compartment mills—wet or dry grinding—open or closed circuit—also air swept for grinding and drying.

GRINDING MILLS



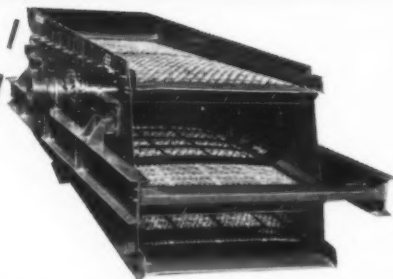
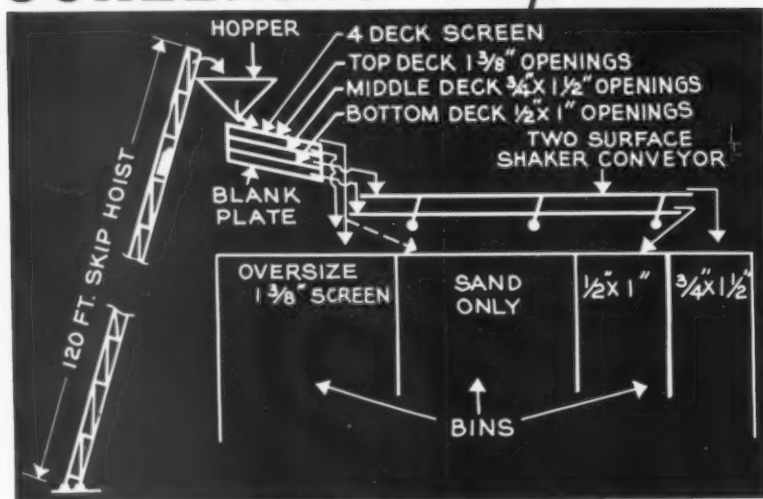
F. L. SMIDTH & CO.

11 WEST 42nd ST.

ENGINEERS AND
MACHINERY MANUFACTURERS

NEW YORK, N. Y.

A **tough** SCREENING PROBLEM



Whether your plant requires standard or special design, Simplicity Gyrating Screens will give you greater operating efficiency—more tons per hour. Separations will be cleaner to closer tolerances with very little upkeep.

These standard Simplicity Gyrating Screen features explain why:

- Counterbalanced eccentric shaft.
- Rubber-mounted screen corners
- Four-way tension over doubly-crowned surface.
- Dust sealed Alemite lubricated bearings.
- Rugged all-steel construction with I-beam frame tied together with rigid steel channels.
- Rubber cushioned power.

... but
**SIMPLICITY
GYRATING
SCREENS**
*provided an
outstanding
answer . . .*

Recently the Fred Schmitt Material Co., St. Louis, Mo., asked Simplicity engineers to set up a gravel separation system to feed into 120 foot silos. This meant skip-hopper feeding rather than the usual continuous belt type feed. Dangers of clogging and screen damage from heavy material impact were much greater than in the usual installation.

Simplicity's solution, the Model D Simplicity Screen, 3'x10', with solid plate fourth deck, shown in the accompanying diagram, resulted in perfect material flow at rate of one 5,000 pound skip load every 90 seconds—even though at times, 80 per cent of material passed through 1/2x1 inch screen on third deck.

*Write Today for Our Literature
Telling the Screening Story*

Simplicity

TRADE MARK REGISTERED

**ENGINEERING COMPANY
DURAND, MICHIGAN**

ROCK PRODUCTS, March, 1946

GENERALLY SPEAKING

(Continued from page 32)

The fact that strikers accept temporary employment with another employer while a strike against their own employer is taking place, does not deprive them of the status of "employees" and the right to vote in an election according to a recent NLRB ruling.

* * * * *

A RWLB has ordered a company to credit honorably discharged veterans, not in the company's employ before entering the armed services with seniority equal to their service time after an ex-serviceman had completed a 30-day trial period in the company's employ.

* * * * *

Discharge of an employee for use of abusive language and threats to a foreman who reprimanded the employee for repeated lateness was held too severe a penalty by an arbitrator in a recent decision. The employee's reinstatement was ordered, with loss of 30 days' back pay.

* * * * *

At least there is one encouraging note where employers must pay liquidated damages and attorney's fees pursuant to the Wage-Hour Law. It has been ruled by the Bureau of Internal Revenue that such payments may be deducted as business expense for income tax purposes.

* * * * *

Limestone is one of the principal ingredients of "Koroseal", a product of Goodrich, featured in recent advertisements. The product can be made with a hard, glass-like surface and still be as flexible as rubber and has an endless list of applications where moisture-proofness and resistance to acids and alkalis is sought.

* * * * *

Reports on construction progress in 1945 indicate that a substantial revival is underway, despite all restrictions. F. W. Dodge Corp. has reported that the total of all construction contracts awarded in the 37 states east of the Rocky Mountains during 1945 was 3,299,303,000 compared with less than \$2,000,000,000 in the previous year—a volume exceeding that for 1943 also.

* * * * *

Commerce Department has announced establishment of its Office of Small Business, to offer services to smaller enterprises. Services to be offered include management information, counsel on business practices and financial problems, and technical assistance.

* * * * *

Highway construction will not clash with launching the housing program; according to a study of the six groups of critical building materials completed by the Federal Works Agency. The reason is that so little of these materials is required in building roads, eliminating any objection for that reason.

* * * * *

Concrete blocks is one of the building materials involved in new directives of CPA to channel scarce materials to builders under the new reversion housing program.

* * * * *

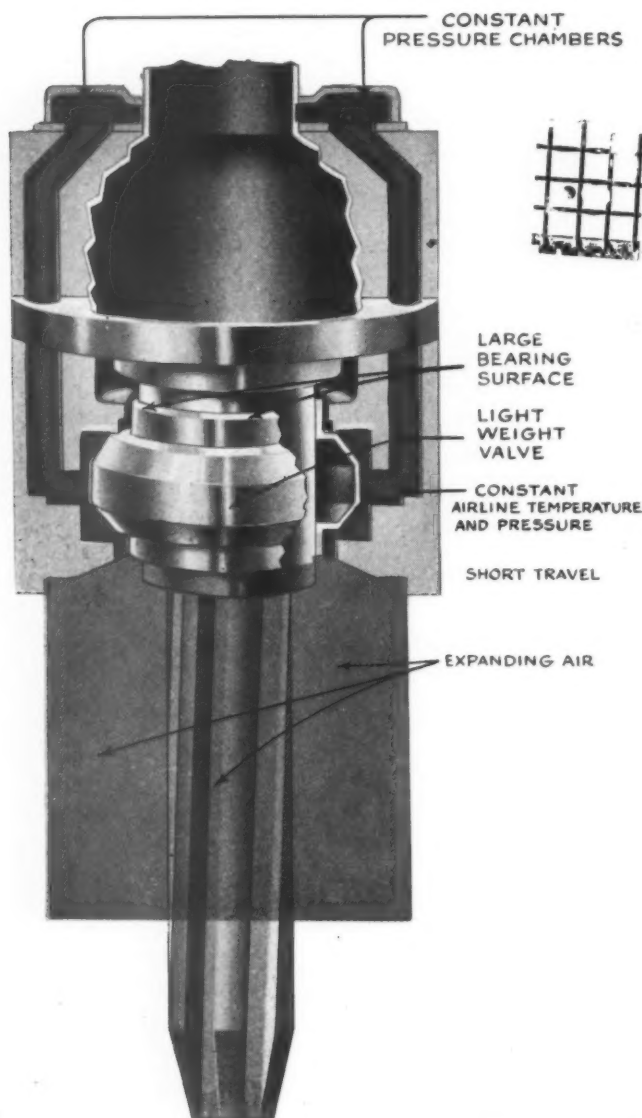
THE EDITORS

WHY LEADING MINING MEN SPECIFY

Thor



ROCK DRILLS



The *ENGINEER* knows that . . .

Thor's Light Weight, Short-Travel Valve

Produces More Work—Cuts Operating Costs!

The Valve is to an air tool what the carburetor is to an automobile engine . . . the vital heart controlling the inlet of power. So intricate is the valve, however, that only engineers who know its function recognize what benefits it can contribute to an air tool's performance and service life.

Leading engineers everywhere specify Thor Tools because Thor valves provide *faster, better work—at lower operating costs—*through these features:

SPEED . . . Air Economy. Extremely light in weight, the Thor Valve moves faster to provide more blows per minute. It maintains this relative high efficiency even at low air line pressures.

POSITIVE ACTION. Light weight, short-travel—and the important fact that the Thor Valve is actuated by the difference between air line pressure and exhaust pressure—assures positive action that *completes every blow.*

ENDLESS LIFE. Light weight and short-travel—plus the large bearing surface on which the Thor Valve operates—eliminates breakage . . . reduces wear to a minimum.

NON-FREEZING . . . Never "Air-starved." Constant pressure chamber maintains air at constant line temperature and pressure. Air cannot expand until it passes valve . . . thus valve cannot "freeze."

EXACT TIMING and BALANCE. All these valve functions are in perfect-timing and balance with the piston hammer. Every stroke is air-cushioned; every blow is complete and powerful.

Have your engineer check these Thor advantages. He'll agree—your nearby Thor Distributor stocks the tools that will give you more work . . . at lowest cost!

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Thor

PORTABLE POWER

TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS



WHEN YOU BUY CONSTRUCTION EQUIPMENT

LET C.I.T.

FINANCE THE PURCHASE ON EXTENDED TERMS

Instead of using your working capital to buy Construction Equipment LET C.I.T. SUPPLY THE FUNDS . . . amortize the investment over many months . . . keep your funds liquid for payrolls, supplies, operating expenses . . . and for expansion of your business.

By financing your purchases through the C.I.T. Construction Equipment Plan you permit machinery to help pay for itself . . . you own a better assortment of equipment and effect important savings in operating costs . . . earn larger profits through increased production . . . the new equipment starts to pay its own way from the time it goes into operation.

It's easy to arrange C.I.T. financing. When you select the equipment wanted . . . and you can combine purchases from several distributors in one obligation . . . simply tell us the name and make of the equipment, terms on which you wish to buy and balance to be financed. With these simple facts, we'll be able to arrange the necessary details.


Whether you buy one or more items . . . and whether the amount involved is large or small . . . C.I.T. WILL FINANCE THE TRANSACTION AT LOW COST. There are no long, drawn-out negotiations . . . simply get in touch with us and we'll be happy to serve you promptly and efficiently.

Any of these offices will furnish full information upon request

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NEW YORK, N. Y.

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The Mark

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INDUSTRIAL FINANCING

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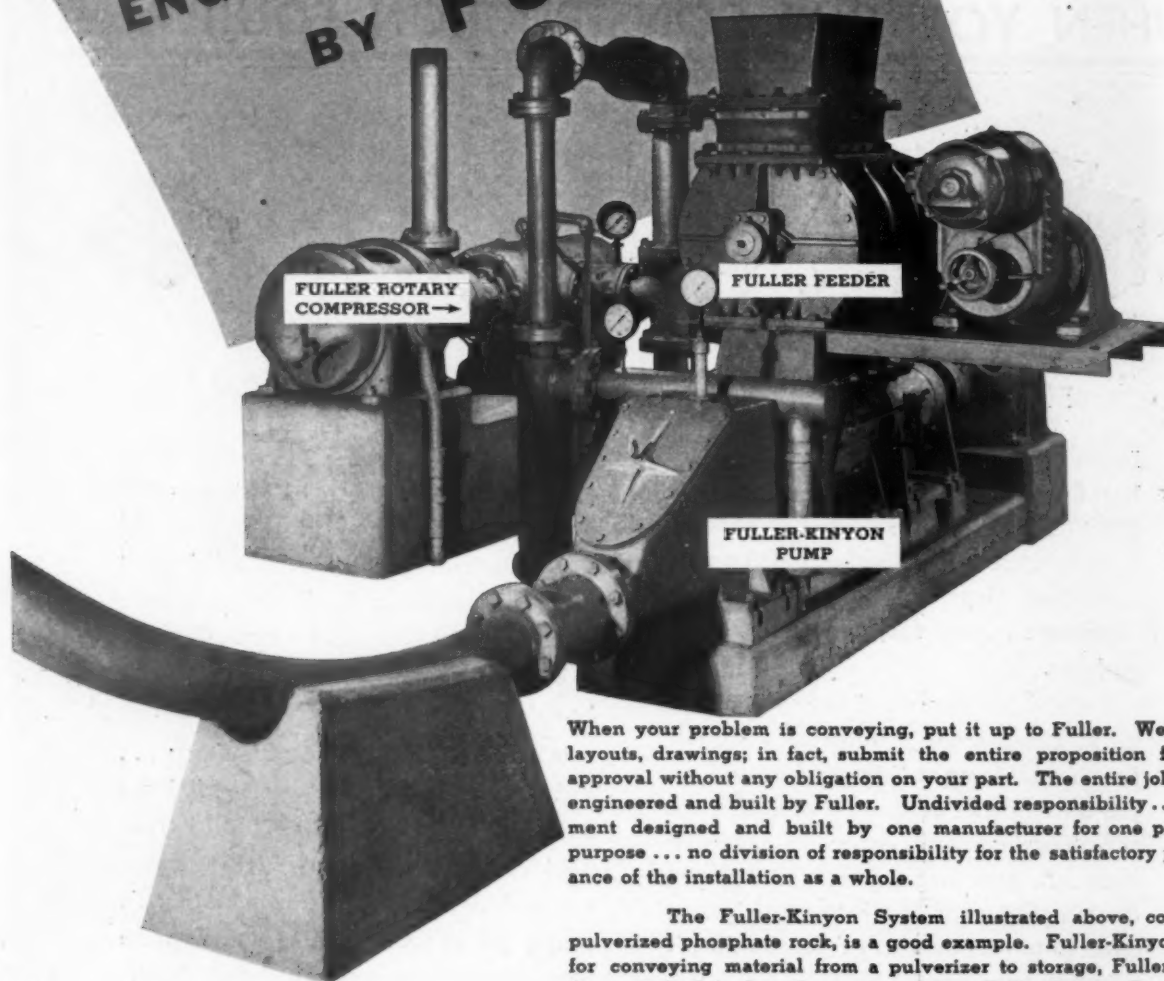
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CORPORATION Limited,
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ROCK PRODUCTS, March, 1946

THE COMPLETE JOB... ENGINEERED AND BUILT BY FULLER



When your problem is conveying, put it up to Fuller. We'll make layouts, drawings; in fact, submit the entire proposition for your approval without any obligation on your part. The entire job can be engineered and built by Fuller. Undivided responsibility... equipment designed and built by one manufacturer for one particular purpose... no division of responsibility for the satisfactory performance of the installation as a whole.

The Fuller-Kinyon System illustrated above, conveying pulverized phosphate rock, is a good example. Fuller-Kinyon Pump for conveying material from a pulverizer to storage, Fuller Feeder for control of feed to the pump, and a Fuller-Rotary Single-stage Compressor, direct connected to the pump, which furnishes air for conveying... air where and when needed and at pressures to do the work most economically and efficiently.

See our exhibit
Chemical Show
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FULLER COMPANY, CATASAUQUA, PA.

Chicago 3 - 120 So. La Salle St.
San Francisco 4 - 421 Chancery Bldg.
Washington 5, D. C. - 618 Colorado Bldg.

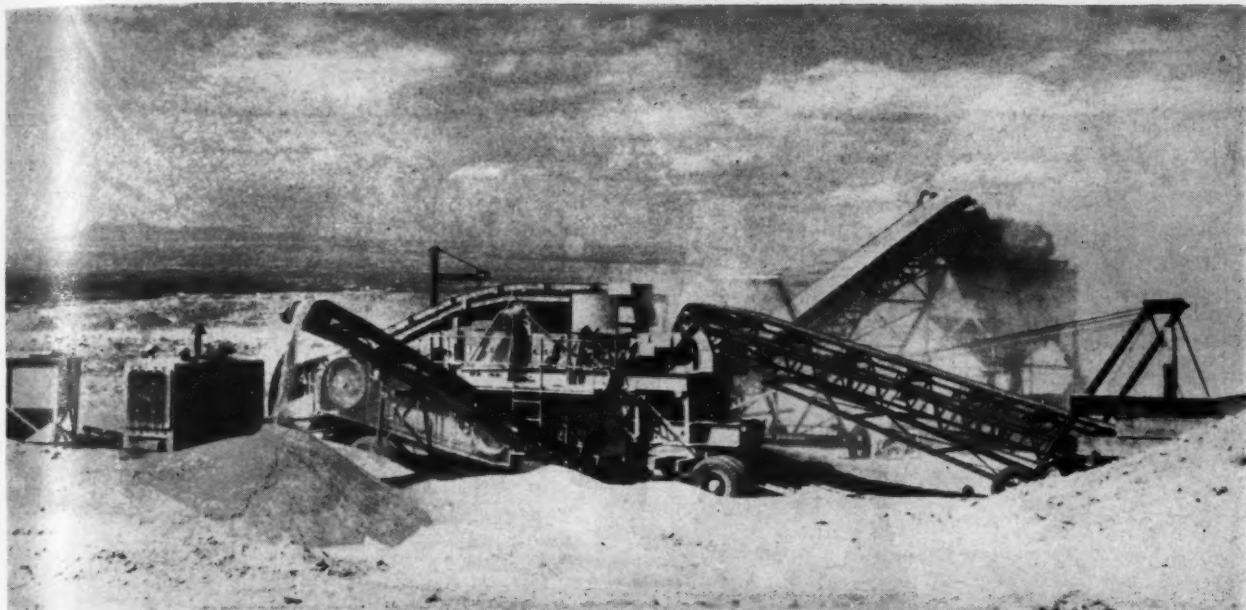


FULLER-KINYON, FULLER-FLUXO AND THE AIRVEYOR CONVEYING SYSTEMS
... ROTARY FEEDERS AND DISCHARGE GATES ... ROTARY AIR COMPRESSORS
AND VACUUM PUMPS ... AIR-QUENCHING INCLINED-GRATE COOLERS ... DRY
PULVERIZED-MATERIAL COOLER ... AERATION UNITS ... MATERIAL-LEVEL
INDICATORS ... MOTION SAFETY SWITCH ... SLURRY VALVES ... SAMPLERS

P76

A BIG PLANT FOR THE BIG JOBS

... where low cost is all-important



The Cedarapids Master Tandem

*"Life Seal" conveyor bearings
require no field lubrication.*

*Quickly convertible to
quarry plant by adding
portable primary.*

*No lost time for setting up
and taking down between
jobs. Ask for bulletin MT-1.*

HERE'S a portable gravel plant that really lives up to its name—**MASTER**—master of low-cost operation for your big aggregate producing jobs. It contains all the features that mean big capacity, trouble-free operation and low cost. Horizontal vibrating screen assures greater capacity and closer grading. Large roller bearing jaw and roll crushers have plenty of capacity for smooth operation for every pit condition. V-belt and universal drives eliminate troublesome chains and sprockets. There are dozens of other exclusive features that make the Master Tandem today's most modern, all-purpose crushing plant. Get the facts from your nearest Cedarapids distributor.

IOWA MANUFACTURING COMPANY

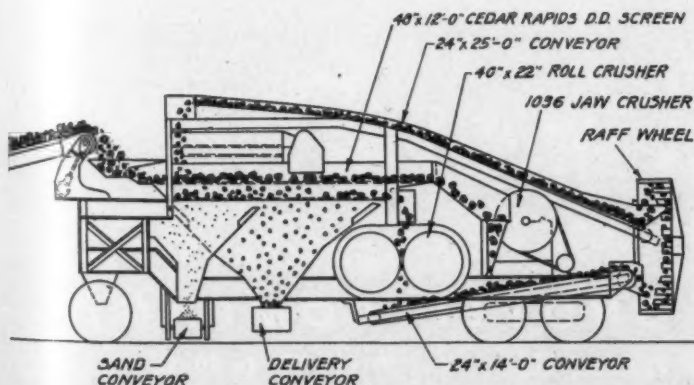
Cedar Rapids, Iowa, U.S.A.

Cedarapids

Built by
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THE IOWA LINE

of Material Handling Equipment Includes
 ROCK AND GRAVEL CRUSHERS
 BELT CONVEYORS—STEEL BINS
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 VIBRATOR AND REVOLVING SCREENS
 STRAIGHT LINE ROCK AND
 GRAVEL PLANTS
 FEEDERS—TRAPS
 PORTABLE POWER CONVEYORS
 PORTABLE STONE PLANTS
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 REDUCTION CRUSHERS
 BATCH TYPE ASPHALT PLANTS
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 DRAG SCRAPER TANKS
 WASHING PLANTS
 TRACTOR-CRUSHER PLANTS
 STEEL TRUCKS AND TRAILERS
 KUBIT IMPACT BREAKERS



ROCK PRODUCTS, March, 1946

ACCLAIMED

THE MACHINE OF TOMORROW

FOR TODAY'S TOUGH DIGGING JOBS

6
CU.YDS.

The New **MARION 151-M**

BECAUSE OF THESE PROVEN FEATURES:

Outside Dipper Handle.
Two-piece Dipper.
Single Hitch to Dipper.
Amplidyne — Rototrol Control.

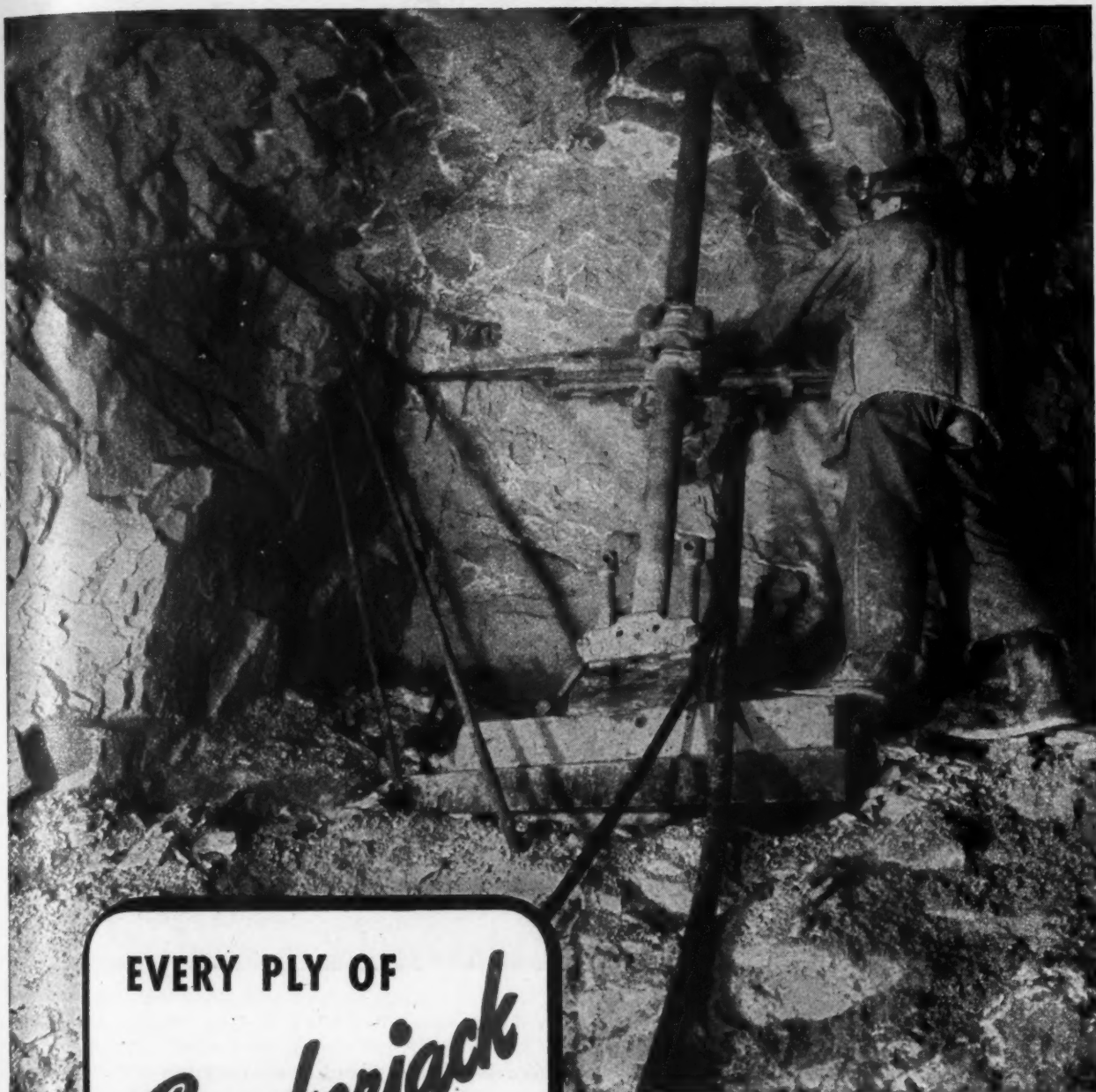
Modern Design.
Sturdy Construction.
Ample Speed, Power, and Weight.
A Real Rock Shovel.

WHAT IS YOUR MATERIAL HANDLING PROBLEM?



THE MARION STEAM SHOVEL COMPANY

MARION, OHIO • Offices and Warehouses in all Principal Cities • $\frac{3}{4}$ CU. YD. to 40 CU. YDS.



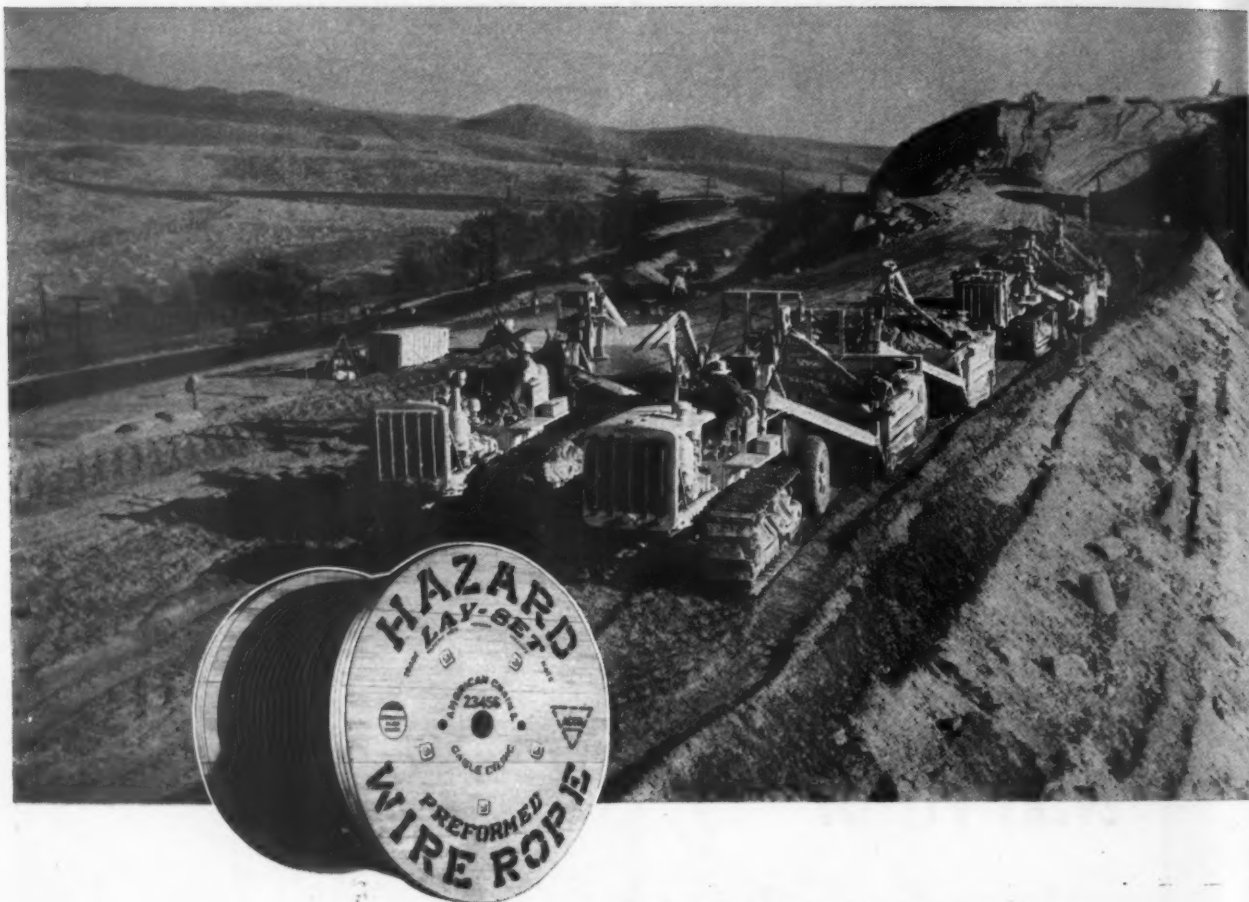
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Crackerjack
 HOSE
 IS PROTECTED AGAINST
 WEAR and TEAR

Abrasion and snagging hazards are minimized with *Crackerjack* air and water hose. Hose cover compounds have been developed that give unusually good service in underground or surface work. Adhesion is excellent. The plies hang together—and above all, *Crackerjack* is resistant to the effects of oil, grease and heat... both internally and externally. Built to withstand required pressures. Available in all sizes... either standard or special construction to fit the job.

The **AMERICAN RUBBER Mfg. Co.**
 OAKLAND, CALIFORNIA
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Get your equipment ready for the huge **A.R.B.A.** road-building program



Make no mistake about it, competition during 1946 is going to be tough. With costs higher all along the line, profits will depend upon operating efficiency. With the A.R.B.A. road and airport building program starting this spring, see to it *now* that your equipment is in tip-top condition. And for long wear with steady production equip your machines with Hazard LAY-SET Preformed Wire Rope. There is no better, safer, more uniform wire rope than Hazard LAY-SET Preformed made of Improved Plow Steel.

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In Business for Your Safety

**HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE**



★ ★ ★ *Editor's Page*

An Industry Appraisal Should Guide the Uninitiated

IT HAS BEEN STARTLING the number of inquiries that are reaching the attention of the editors these days, requesting information or sources of information on various, or all, phases of the concrete masonry business. They come from individuals who contemplate entering the industry. The trouble is that the big bulk of these inquiries are from persons who obviously are totally unfamiliar with the industry in any of its ramifications; far too few of them originate from sources that have the knowledge and backing to build a sound concrete masonry business that will do credit to the industry.

Must Have the Know-How

It is probably true that there never has been a more favorable time than now to start a new business, and every encouragement is being, and should be, given those who contemplate entering certain lines of endeavor. There are kinds of new businesses that need new blood and which require no background of experience or substantial investment, that are peculiarly suited to new enterprisers who no longer desire to work for someone else. That's all well and good, but the concrete masonry industry is not for those with lack of knowledge and experience who think the industry (also the rock products industry, particularly agricultural limestone) offers opportunity to get rich quickly and easily. It just isn't in the cards.

We do not even imply that there is no place for the small manufacturer in this industry, for that is not our point here. There obviously are opportunities for qualified individuals who are so constituted with business sense and ability that they will add to the prestige of the industry. Assuming that these conditions are met, the only justification for new plants is where existing concerns are not taking advantage of their opportunities and in localities where plant capacity will surely fall short of demand. A properly managed, well-equipped small plant can be capable of manufacturing a quality product comparable to that of larger plants and probably at favorable costs.

But, it is obvious to us that the majority of those individuals who contemplate entering this industry do not meet those qualifications; no doubt in many instances because they have been misinformed or have not access to any authoritative source of information or the benefit of a word of caution. A good number will lose their shirts. Past experience has proven that less than ten percent of new small enterprises normally do not survive more than a few years; the survivors being those who were qualified to enter a given business.

Too many newcomers-to-be fail to realize the extent to which the industry has progressed beyond the days when it manufactured ordinary, and sometimes not too good, block as such. They do not realize that a fortune and untold effort have been expended in the development of a manufactured, engineered product of high standard and that great expense and effort is being spent in the promotion of concrete masonry for high-grade construction. They must recognize that merchandising and service normally, assuming a quality product, are the principal phases of the business, and not be influenced by temporary conditions as they exist today. Shortages of labor that limit productive capacity, and temporary advantages that favor the industry and which make it appear that the main consideration is the getting of more production will soon yield to normal conditions when there will be intense competition for the customer's dollar.

Scientific Trend

An appraisal of progress being made toward still further improvement of product and increased manufacturing efficiency, that will reflect in lower prices to consumers and enhanced acceptance in the very immediate future, might well be taken by the uninitiated. Those improvements increase the competitive factors that must be met, and are being established by concerns with years of experience in the business.

Industry-sponsored studies being carried forward toward the improvement of aggregates and curing practices, both vital to quality of product and operating efficiency, serve to illustrate the scientific trend the industry has taken. In order to compete, the post-war plant must be equipped to supply the construction industry with properly cured units Winter and Summer, for it will be imperative that weather conditions, which have made construction such a seasonal industry in the past, must be overcome to fill long pent-up demands for houses and other structures. Covered storage and accelerated methods of curing will be the answers.

Plans for post-war plants, some of them mass production layouts, shown in this issue, represent the extent to which established manufacturers are going in increasing production and lowering production costs in handling both raw materials and finished product.

Broer Nordberg

PROVED ON OVER 400 UNITS

The ball-bearing principle of grinding
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The ball-bearing principle of grinding combines crushing and attrition under controlled pressure. It produces the fineness of fuel necessary for efficient combustion at all rates of operation. This principle of grinding permits a wide range in size of pulverization and conditions of operation. The pulverizer is moderate in space requirement per unit of capacity.

B&W Type E Pulverizers are

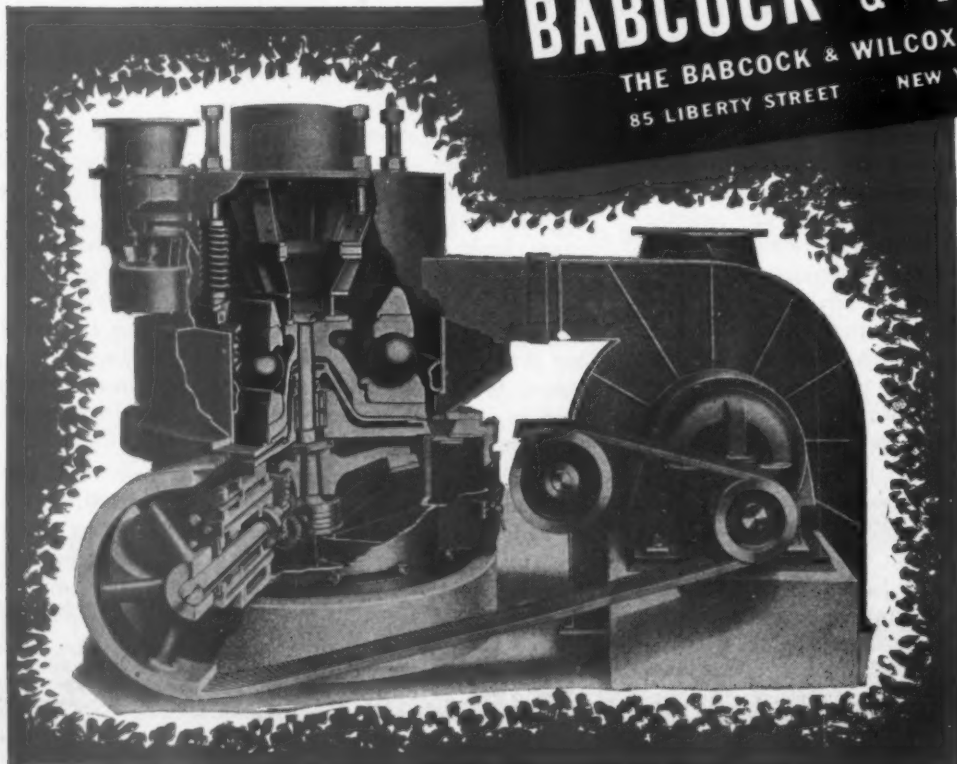
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- Consistently high fineness.
- Ability to handle high-moisture coals.
- Reliable operation and low maintenance.
- Uniform delivery of coal.

B&W's well-rounded experience in design, manufacture and installation of direct-firing pulverizers is at the service of cement plant owners and operators.

BABCOCK & WILCOX

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Cut-away view of the B&W
Type E Pulverizer

C-39

Rocky's NOTES

Revised Predictions and Comments

SINCE WRITING "my guess" (not "My Day")¹⁾ on the future of price controls on rock products machinery, published in the February issue, I have had the opportunity of discussing the subject with numerous machinery manufacturers and their prospective customers—the producers of aggregates. Had I this opportunity before the "Notes" went to press I should probably have reduced the estimated price increases on machinery from "50 to 75 percent" to 25 to 50 percent. Nevertheless the fact remains that *any* estimate at this time is a pure guess, and one man's guess is as good as another's.

The crucial point about any such discussion is that more than 30 days have passed since the February "Notes" were written, and yet manufacturers are just as confused now as they were then. Inventories of steel and other materials, on which manufacturing costs were partly estimated, are being used up; and no manufacturer knows what replacement of inventory will cost, or when replacement will take place, or whether his own "labor troubles" will begin now or later.

Standard and Special Machines

It must be confessed that our original guess of 50 to 75 percent increases in machinery prices was based on estimates made by manufacturers of a very special type of machinery or equipment—an assembly job quite as much as a manufacturing job. The increased cost of manufactured parts required will obviously increase more than the direct labor costs of the specialty manufacturer. However, in the case of the manufacturer of a standard type of machine, with few changes from the pre-war product, a price increase of perhaps about 25 percent, under the present outlook, would probably be sufficient to cover expected costs.

The suggested 25 percent does not take into account many other factors which may influence the price to the ultimate user, because if the railways are compelled to pay increased wages to operating employees, the telephone and telegraph companies to

their employees, etc., the overhead costs of doing business for every one will increase and be added to over-all manufacturing costs, or at least to ultimate selling prices.

Dangers in Cheap Money

The reaction of some producers to the suggestion that cheap money, or cheap credit, would overcome higher cost of plant machinery and equipment, was not entirely favorable to cheap money. Some pointed out that it was easy money, or cheap credit, that nearly ruined them in the most recent post-war boom (1921-1930). Apparently, the old-timers with long memories are not keen about acquiring debt in boom times, for fear of having to pay off when money and credit may be hard to get.

We would like to remind our producer-readers, however, that we recall no instance where any of them got into financial difficulties following the previous post-war boom as a result of improving and re-equipping their plants on short-term credit. Some did get into serious difficulty from attempting to consolidate with competitors at extravagant capitalizations, or from expanding their productive capacities on too optimistic a scale. In other words, what was true of these industries was true of all industry, it was not the use of cheap credit for production, but its use for speculation, that caused the 1930's depression.

Experimental Economics

Future historians probably will consider our generation as the foremost experimenters in economics. (Our only hope is that future generations will profit from these experiments!) Most of our experiments have been designed to side-track "the law of supply and demand." Surely, everyone is now aware of the objec-

tives of our present government policies: (1) To maintain dollar income of wage earners by increasing wages; (2) To maintain the purchasing power of their dollars by holding down prices; (3) To get away from price controls eventually by production and competition.

Obviously objects (1) and (2) are incompatible as short-term objectives, hence there is no escape from increases in both wages and prices, except to hold down both. This latter course is not feasible because only inflated money incomes will make possible maintenance of inflated national debt and reckless national expenditures. So both government wage policy and U. S. Treasury debt policy point to continued inflation of money or credit, which means continued decreased purchasing power of the dollar. Most people apparently believe such inflation can be controlled, although it will probably be the first time in history that inflation on such a scale of printing-press money has been controlled.

The interesting thing about the third objective of present government policy—eventual elimination of price controls and continuance of high wage scales through production—is the direct reversal of the economic philosophy of the 1930's. We all remember the N.R.A.? The real reason for N.R.A., of course, was to limit productive capacity, so that the pressure of surplus capacity would not drive competitors to cutting each other's throats. The New Deal government was not so much worried about the competitors' throats as it was impressed by the producers' argument that this was the cause of wage-cutting and low wages. The object of the N.R.A. was therefore to permit producers to get fair and decent prices so that they could pay fair and higher wages.

Now government is suggesting a return to what it calls "competitive production," but what is meant is really excessive productive capacity, to hold down prices and maintain high wages. Whether the promoters of this idea are unacquainted with the N.R.A. experiment, or are trying to kid the public, labor, or maybe themselves, it brings the cycle of our generation's economic experiments right back to where we started some 15 or more years ago; and the success of this idea would be nothing less than official recognition again of the law of supply and demand, that we tried to circumvent by N.R.A., the plowing under of crops, the killing of little pigs, etc., etc. No wonder we are a confused lot.

Nathan C. Rockwood

Bubbles in Concrete

Improve Its Quality At No Extra Cost

Better Concrete: By creating billions of properly distributed microscopic air cells in the concrete mix, Atlas Duraplastic air-entraining cement makes the concrete more workable, more plastic, more cohesive and more uniform.

More Durable Concrete: Because of the extra plasticity imparted by the billions of tiny air bubbles, Duraplastic cement requires less mixing water for a given slump. This reduces segregation and bleeding, fortifies the concrete against the effects of freezing and thawing weather, and renders paving concrete highly resistant to the scaling action of de-icing salts.

No Extra Cost: Duraplastic cement calls for no additional materials—merely the same care and good workmanship regularly employed. It produces concrete that spreads, screeds and finishes easily. It complies with ASTM specifications, sells at the same price as regular cement, and makes better concrete at no extra cost.

Details about Duraplastic cement are summarized in a pamphlet sent on request. Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

OFFICES: New York, Chicago, Albany, Boston, Philadelphia, Pittsburgh, Cleveland, St. Louis, Minneapolis, Duluth, Kansas City, Des Moines, Birmingham, Waco.

RP-D-32

ATLAS DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

TRADE MARK REG.
U. A. C. CO.



SUNDAY EVENINGS—American Broadcasting Company (ABC) Network—U. S. Steel's "The Theatre Guild on the Air"

the *Personal Side* of the NEWS

Transferred

JOHN M. HANSEN, manager of the Vermont Mica Co., Barre, Vt., has been transferred to the sales department of the home office of the company, the A. O. Schoonmaker Insulation Co., New York, N. Y. Mr. Hansen had full charge of the war contract work at the plant in supplying mica items for radio, radar and other articles of electrical equipment used by the Armed Forces. His new duties will take him to New York and Pennsylvania, as well as the New England States. Mr. Hansen will be replaced at the plant by William F. Vanderrest, who has been associated with the New York office since January 1. He was previously employed with the Bureau of Aeronautics of the Navy Department, where he acquired considerable experience in the uses of mica products for electrical equipment.

Production Manager

JAY C. EHLE, chairman of the Committee on Curing Methods, National Concrete Masonry Association, Chicago, Ill., has been appointed production manager of the Cleveland Builders Supply Co., Cleveland, Ohio, according to an announcement by W. H. Crangle, vice-president of the company. In his new capacity Mr. Ehle will be responsible for the general supervision of production at the company's three plants in Cleveland.

A.R.B.A. Officers

JAMES J. SKELLY, Media, Penn., has been re-elected president of the American Road Builders' Association for the year 1946. PAUL B. REINHOLD, Pittsburgh, Penn., succeeds himself as vice-president of the Northeastern District. ALEX F. HANCOCK, Mobile, Ala., became vice-president of the Southern District, succeeding W. A. Young, Macon, Ga. E. R. GALVIN,

Massillon, Ohio, was re-elected vice-president of the Central District. ROBERT A. ALLEN, Carson City, Nev., became vice-president of the Western District, replacing C. H. Purcell, Sacramento, Calif. H. C. WHITEHURST, Washington, D. C., was elected treasurer.

J. T. CALLAWAY, assistant to the vice-president, Goodyear Tire & Rubber Co., Chicago, Ill., was re-elected president of the Manufacturers' Division. W. B. GREENE, president of the Barber-Greene Co., Aurora, Ill., was elected vice-president and H. N. SCHRAMM, president, Schramm, Inc., West Chester, Penn., was retained as secretary-treasurer.

Joins Engineering Firm

VINCENT K. CATES, Melrose, Mass., has joined the engineering staff of The Thompson & Lichtner Co., Inc., Boston, Mass. Mr. Cates was recently Commander, U.S.N.R., of the 122nd Construction Battalion in the Philippines.

Promoted

ROY N. YOUNG, assistant vice-president and operating manager, Lehigh Portland Cement Co., Allentown, Penn., has been elected vice-president and operating manager to succeed H. R. HAUSMAN who has retired after 44 years of service with the company.

Resigns

E. J. WEMLINGER has resigned as district manager of the Colonial Mica Corp., Santa Fe, N. M. During recent months he has been at the company's New York office. He will be located temporarily at Livingston, Mont.

Joins Sales Staff

MYRON HULTMARK, who was in charge of the concrete products section of the War Production Board and the successor agency, Civilian

Production Administration, Washington, D. C., has joined the sales staff of the Besser Manufacturing Co., Alpena, Mich.

Blocks Interest "Shortstop"

MARTIN MARION, well-known shortstop for the St. Louis Cardinals, has formed a partnership with his brother,



Martin Marion, Cardinal's outstanding shortstop, partner in block business

er, John Marion, to produce concrete block. The enterprise, known as the "Abbeville Concrete Block Company", is located in Abbeville, S. C., and consists of a plant with a capacity of 1200 blocks per day. Robert McCarter, Abbeville, will be the general manager.

"Marty" is known to all baseball fans as the outstanding shortstop of his time, and was voted "Most valuable player in the National League" in 1944. He was also the first in the National League to receive the annual Landis Memorial Trophy.

District Engineer

FRED H. RYAN has been appointed district engineer in charge of the Atlanta, Ga., office of the Portland Cement Association, and will direct activities in Florida, Georgia and South Carolina, with headquarters in Atlanta, Ga. Before joining the Army Air Corps in April, 1942, Major Ryan served the Association for eight years as field engineer in Michigan.



Left to right: Dr. J. C. Witt, Marquette Cement Manufacturing Co.; Wang Chung Han; H. F. Gonnermen, Portland Cement Association; Tang Chao Yu; Liu Keen Tsung; Paul Van Zandt; Nathan C. Rockwood; Wang Cheng Kang. Photo taken at Chicago Engineer's Club while four Chinese were on a government mission to the United States

Addresses Business Paper Editors

VINCENT P. AHEARN, executive secretary of the National Sand and Gravel Association, and a member of Secretary of Labor Schwollenbach's Advisory Committee on Conciliation, Washington, D. C., addressed the recent meeting of the National Conference of Business Paper Editors. His speech was considered by many as one of the most important addresses of the meeting.

Manages Materials Firm

HOWARD MOYER has been appointed general manager of the Mason Materials Co., Shelton, Wash., producers of ready-mixed concrete, concrete pipe, block and building material. Mr. Moyer was previously in charge of transportation at the U. S. Naval Auxiliary Air Station at Shelton and is a veteran of 15 years' service in the Navy. The Mason Materials Co. is affiliated with the Graystone Concrete Products Co. of Seattle.

Enters Gravel Business

CAPT. ROBERT F. BRUNS, after 14 months with the 10th Air Force in the China-Burma-India theater, has decided to become actively associated with his father, William G. Bruns, in the operation of the Eagle Sand and Gravel Co., Sioux Falls, S. D. He was connected with the national advertising department of The Argus-Leader for five years before joining the armed forces.

C. of C. Director

HARRY B. TELLYER, owner of the Tellyer Concrete Pipe Co., Albuquerque, N. M., has been elected a director of the Albuquerque Chamber of Commerce to complete the unexpired one-year term of M. M. Hardin, who has resigned because of difficulty in attending meetings regularly due to frequent absence from the city on business. Mr. Hardin was chairman of the Chamber's industrial and manufacturing committee.

Joins Sales Staff

JACK RYAN, recently discharged from the Army Air Forces, has joined the sales staff of the Northwestern Portland Cement Co., Seattle, Wash. Mr. Ryan joined the Army after attending the University of Washington and has been in service for four years. He was with the early B-29 units in the Mariana Islands, and he participated in many of the raids made on the home islands of Japan.

Elected Vice-President

S. N. PETERS, JR., general sales manager of the Lawrence Portland Cement Co., New York, N. Y., has been elected vice-president of the company.



Walter B. Jones

Returns from Service

WALTER B. JONES, State geologist of the Geological Survey of Alabama and director of the Alabama Museum of Natural History, University, Ala., has resumed his duties after more than four years of service in the Army, in the Southwest Pacific area. David DeJarnette, curator of the Museum, is still in the Philippines although he is expected back in a month or two. Dr. Allan F. Archer and James T. DeJarnette, assistant curator, are still in service.

Woman Operates Concrete Business

MISS HAZEL DARNELL, attractive manager of the Acme Ready Mixed Concrete Co., Rockford, Ill., has the distinction of being the sole woman operator in the National Ready Mixed Concrete Association. She attended the recent convention of the Association.



Miss Hazel Darnell

tion in Cincinnati, Ohio, and was acknowledged by other delegates to be a competent businesswoman. Miss Darnell became manager of the company three years ago, when, as office manager, she was considered the logical successor to the manager when he entered military service. She graduated from a business college and started in the concrete business 12 years ago when she was employed by a paving contractor, eventually becoming office manager. Miss Darnell joined the Acme Ready Mixed Concrete Co. as office manager four years ago.

Rejoin Graystone

KENNETH T. DURYEE, after three and one-half years' service with the troop transport supply section of the U. S. Coast Guard Reserve, has returned to his former position as office manager of the Graystone Concrete Products Co., Seattle, Wash. He has been with the company for the past ten years. During the time of his service with the Coast Guard Mr. Duryee was in the Atlantic, Pacific and Mediterranean areas.

COMDR. NORMAN L. FIELDS, who has had wide experience in the concrete and clay products industry, has been discharged from the Navy and has resumed his position with the company as sales engineer. Mr. Fields joined the Naval Reserve in August, 1940, and rose to the rank of full commander during his five years' service. He was in command of a destroyer escort, and served in the Atlantic, Pacific and Mediterranean theaters.

Stone Co. Officials

WILEY B. BRYAN, chairman of the board of the Kentucky Stone Co., Louisville, Ky., has been elected president of the company to succeed the late Sam P. Burnam who passed away recently. Verne C. Morgan has been named vice-president and treasurer; Lister Gaines, vice-president of production; and W. T. Brooks, secretary.

Made Superintendent

L. A. NORMAN, JR., formerly supervisor of field engineering, Colonial Mica Co., Asheville, N. C., has been appointed plant superintendent of the Harshaw Chemical Co., El Segundo, Calif., with his headquarters at Redondo Beach, Calif. Prior to his association with the Colonial Mica Co., Mr. Norman was with the Central Eureka Mining Co., Sutter Creek, Calif.

Leaves Rock Co.

CHARLES DUNN, superintendent of the Garnett Rock Co., Garnett, Kans., has resigned to accept a position as superintendent of the Concrete Materials Co., Moline, Kans. His successor has not yet been appointed.

Heads Lime Plant

BAYARD MAGEE, manager of the Bellefonte, Penn., lime plant of the National Gypsum Co., Buffalo, N. Y., is supervising the construction of the \$2,000,000 lime plant at Kerns, Va., which he will manage upon completion. Mr. Magee began his practical experience with a lime company in Ohio shortly after receiving his master's degree in electrical engineering at the Bliss Electrical School in Washington, D. C. His first association with the National Gypsum Co. began in 1940 when the company purchased the Chemical Lime Company's plant in Bellefonte, Penn., which he was then managing. When the plant was enlarged and modernized Mr. Magee was placed in charge of construction under the direction of Fred A. Manske, production manager. Upon completion of the work he continued as manager of the plant.

Warner Changes

BROWER P. KELLY, formerly district sales manager of the Penn-Dixie Cement Co., New York, N. Y., has joined the sales department of Warner Co., Philadelphia, Penn. Mr. Kelly is widely known by contractors in New York, Philadelphia, Baltimore and Washington. MAC A. BRYAN has been advanced to the position of night mine production foreman at the Bellefonte, Penn., plant. He has been employed in the mine in various capacities since 1922.

Names New Officers

HARRY H. BRANDON of the Melvin Stone Co., Wilmington, Ohio, has been elected president of Macadam Pavements, Inc., which is a comparatively new organization in Ohio, formed for the purpose of studying ways and means of improving specifications and construction methods for various types of macadam pavements. Other officers named were Nial H. Ryder of Findlay, Ohio, vice-president; and Charles J. Shelly of Thornville, Larry E. Townsend of Piqua, Walter Culbertson of Youngstown, George Karch of Celina, C. F. Boyd of Gallon, and G. N. Porter of Marion, trustees.

Universal Promotion

JOSEPH L. HOHL, assistant to plant manager at the Hudson, N. Y., plant of the Universal Atlas Cement Co., New York, N. Y., has been appointed assistant plant manager. Mr. Hohl, a graduate in mining and metallurgy of the Colorado School of Mines, Golden, Colo., rejoined the Hudson plant last October after serving as a draftsman at the Northampton, Penn., plant since 1926. He spent 12 years with the Coplay Cement Mfg. Co., Coplay, Penn., as plant engineer and as superintendent. From 1941 to 1945 he served as field engineer for the Bethlehem Steel Corp., Bethle-

hem, Penn., and the Research Corp., Bound Brook, N. Y.; also as engine designer for Consolidated-Vultee Aircraft, Allentown, Penn., and Republic Aviation Corp., New York.

Manager Returns

LT. COMDR. A. B. METCALF, who established the Columbia Concrete Pipe Co., Wenatchee, Wash., in 1932, has again taken charge as manager of the company. He entered the Navy in 1942 and served in both the Atlantic and Pacific areas. His most recent assignment was on a salvage and repair ship in the Aleutians.

Association President

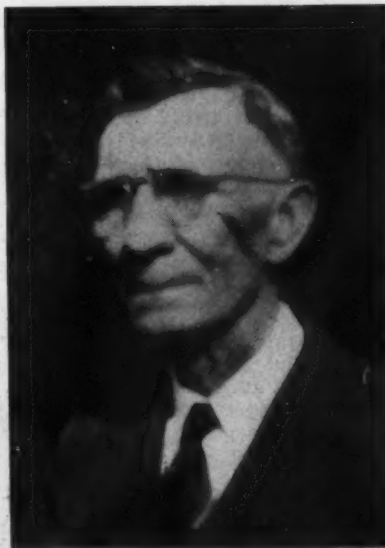
VERNE C. MORGAN, vice-president and treasurer of the Kentucky Stone Co., Louisville, Ky., has been elected president of the Kentucky Crushed Stone Association. GILBERT BRUNHOFER, Louisville Crushed Stone Co., Louisville, Ky., has been named vice-president; JAMES R. THOMPSON of the Blanton Stone Co., Frankfort, Ky., is treasurer, and W. G. TRICE of the Hopkinsville Stone Co., Hopkinsville, Ky., is secretary.

Lone Star Appointment

HUGH O. MELOY, formerly assistant superintendent at the Dallas, Texas, plant of the Lone Star Cement Corp., New York, N. Y., is now superintendent of the Houston plant.

Retires

G. E. WILLIAMS, plant superintendent of the Radford Limestone Co., Inc., Radford, Va., has retired after 33 years of continuous service with the company. Mr. Williams who has unusual mechanical ability began working for the company in 1912. Before joining the Radford Limestone Co., Mr. Williams was in railroad construction work in Kentucky, Ohio, West Virginia and Virginia.



G. E. Williams

OBITUARIES

SAM P. BURNAM, president of the Kentucky Stone Co., Louisville, Ky., died on January 16 at the age of 58. Surviving Mr. Burnam are his mother, Mrs. Cynthia Burnam, Richmond, Ky., and his sister, Mrs. W. W. Russell of Massachusetts.

Mr. Burnam was a graduate of Yale University. His first connection with the crushed stone industry was in 1920 with the Boggs-Burnam Co., Yellow Rock, Ky. Mr. Burnam headed this company until the Kentucky Stone Co. took over operations in 1936 when he became president of the combined operations.

In addition to heading the Kentucky Stone Co., Mr. Burnam was a director of the Madison Southern National Bank and Trust Co. in Richmond, Ky., and was a partner in the insurance firm of Burnam & Harber.

ALVIN U. LONG, retired general superintendent of the Quincy, Ill., plant of the Marblehead Lime Co., Chicago, Ill., passed away December 6 at his home in Quincy. He had been with the company for 37 years. Mr. Long was 74 years old at the time of his death.

H. O. PENN, retiring president of the Associated Equipment Distributors, died of a heart attack while he was attending the 27th annual convention of the Association in Chicago, Ill. Mr. Penn was president of the H. O. Penn Machinery Co. of New York.

WILLIAM JACKSON, JR., president, general manager and superintendent of the Jackson-Bangor Slate Co., Pen Argyl, Penn., died January 11 at the age of 70. Mr. Jackson had spent his entire life in Pen Argyl and had been general manager and superintendent of the company for 50 years.

HERBERT W. CALDWELL, formerly president of the Cleveland Quarries Co., Cleveland, Ohio, died January 12 at his home in Cleveland Heights. He was 79 years old. Mr. Caldwell had been with the company and the predecessor concern, Cleveland Stone Co., for more than 50 years at the time of his retirement six years ago.

ROGER MERRITT, vice-president of Merritt Bros. Sand and Gravel Co., Lincoln, Nebr., passed away recently. He was 42 years old. Mr. Merritt had received his discharge from the Seabees on July 16.

MOSE BROOKS, who had been engaged in the concrete block business for many years at Zimmerman, Minn., died recently after a long illness.



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★ ★ ★ *Washington* NEWS

DRASTIC CHANGES in the wage-price policy of the government were announced by President Truman in February. Under the new set-up price increases will be granted when necessary to permit wage increases of from 15 to 17 percent and give an employer a profit equal to his 1936-1939 base level. Formerly wage increases could be granted voluntarily, but employers were required to wait six months before requesting price increase. Under the new policy any "approved" wage increase may be submitted as the basis for a price increase if the employer can show that his profits without a price increase would fall below the base level.

Along with this announcement came a shake-up in the administrative personnel. Chester Bowles, OPA Administrator, succeeds John Collet as stabilization administrator, and Paul Porter becomes head of OPA. Mr. Bowles, in his new office, will administer the entire wage-price policy, but will be subject to the veto powers of John Snyder, director of War Mobilization and Reconversion.

Strikes Affect Stone Production

Steel industry strikes caused a number of crushed stone plants producing flux stone to sharply curtail production. Even with the strike settled, there will be a lag before steel production reaches capacity. Slag processors also are affected. This in turn has tightened the supply of expanded slag aggregates used in the concrete products industry. Demand under normal conditions without a steel strike has been so heavy that concrete products manufacturers were without any reserve storage, and the steel strike has made this situation acute.

Will OPA Be Continued?

Much speculation is current on the question as to whether price controls and the OPA will be continued after June 30. Reports from responsible sources in Washington, D. C. indicate a strong probability that the law will be continued, but Congress is expected to impose certain limitations on OPA authority in an effort to speed up price changes essential to get production under way.

The construction materials industries have been hopeful that price restriction would be lifted, particularly with respect to sand and gravel, crushed stone, cement, and lime which are in relatively good supply with

ample productive capacity in most localities. However, the OPA has expressed the view that release from controls at this time would have an inflationary effect on building costs. The price of these materials is a very small factor in the over all costs of construction and it is contended by producers that any small increases could very easily be absorbed.

Recognizing that in quite a number of areas, the present price ceilings are not fairly compensatory in view of higher labor and material cost OPA has made regional increases. Producers should take advantage of this method of relief.

Lumber Shortage Stimulates Production of Precast Lightweight Concrete

Quite a number of news reports indicate that concrete products manufacturers are going into the manufacture of large lightweight precast concrete units suitable for roofs and walls. Vermiculite and other lightweight aggregates are being used, according to these reports.

The shortage of lumber has had the effect of slowing up construction all over the country. This of course has stimulated demands for concrete masonry units, but flooring and trim are still considered essential in house construction and their scarcity has had the effect of holding down building progress.

CPA priorities regulation 33 has become effective and the first of its directives to channel scarce materials into between 400,000 and 500,000 moderate and low-cost housing units for veterans was issued. The first directive to PR33 spells out the methods by which lumber and millwork will be channelled into the housing program. Directives governing gypsum board and lath, concrete products, and clay products are expected to follow.

Necessity Certificates

Holders of Necessity Certificates covering expanded facilities in the war program who wish to file statements of correct descriptions or costs of their emergency facilities must do so before April 15, 1946, according to a recent CPA announcement. Necessity Certificates are documents issued by the War Production Board, predecessor of the Civilian Production Administration, and earlier by the War and Navy Departments, declaring a privately-financed plant expan-

sion or new facility essential for national defense. Holders of the certificates are permitted to deduct varying proportions of the cost from their income tax returns. A five-year amortization period was provided, but contractors could apply for amortization over a shorter period under certain circumstances if the need for the certified facilities in the defense program terminates during the emergency period. A presidential proclamation September 29, 1945, ending the emergency period with respect to section 124, gave contractors an automatic option of writing off such costs for tax purposes in a shorter time without filing application for Non-Necessity Certificates.

Appoint Housing Industry Committee

John B. Blandford, Jr., Administrator of the National Housing Agency, recently announced the appointment of a housing industry committee to cooperate with the federal government on a public information program on the housing emergency. Howard B. Smith director of the Department of Real Estate Finance, American Bankers Association, is chairman. Other committee members are: F. Stuart Fitzpatrick, U. S. Chamber of Commerce; Henry P. Irr, United States Savings and Loan League; James W. Follin, Producers Council; William G. Nicholas, CIO; Harry C. Bates, A. F. of L.; H. R. Northup, National Retail Lumber Dealers Association; Harold P. Brauman, National Savings and Loan League; Frank Cortright, National Association of Home Builders; Walton Onslow, National Association of Real Estate Boards; and John W. Sandstedt, National Association of Mutual Savings Banks.

No Price Increase—No Blocks

Harry Wellnitz, speaking for the concrete block manufacturers of Columbus, Ohio, recently told the Columbus Housing Commission that OPA had not granted a price increase to the industry since prices were frozen in March, 1942. An application for a higher price scale was filed with OPA last April, 1945, said Mr. Wellnitz, but no hearing was held nor any action taken on the application. He expressed the belief that manufacturers could not go on taking losses, and said that the block industry in the Columbus territory

(Continued on page 54)

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TEXACO Lubricants and Fuels

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON SUNDAY NIGHTS ★ METROPOLITAN OPERA BROADCASTS SATURDAY AFTERNOONS

Lehigh Valley Cement Wage Increase

CEMENT companies in the Lehigh Valley district recently signed wage agreements with their 3000 employees granting an 8-cent an hour increase effective April 1. Mills which have agreed to the increase are the Sands Eddy, Fogelsville and Ormrod plants of Lehigh Portland Cement Co., Alpha Portland Cement, Allentown Portland, Valley Forge Cement, Universal Atlas, Coplay Cement, Whitehall Cement Manufacturing Co., Giant Portland, Keystone Portland and National Portland.

California Plants Active

REPORTS from California indicate that overall operations are averaging about 60 percent of total plant capacity. Santa Cruz Portland Cement Co., and Permanente Cement Co., are operating at or near capacity. Calaveras Portland Cement Co. is running about average with some manpower difficulties. Pacific Portland Cement Company's Gold Hill, Ore., plant is in operation, but its Redwood City, Calif., gypsum and cement plants have been closed. Monolith Portland Cement Co. has been operating at about 75 percent of capacity, and Blue Diamond at nearly 70 percent. Santa Cruz Portland Cement Co has started work on its new kiln installation.

Completing Gypsum Plant

NATIONAL GYPSUM Co., Buffalo, N. Y., announces that construction work on improvements at the Savannah, Ga., gypsum plant is making good progress. It is expected that all the work will be finished by April this year, increasing production capacity about 25 percent. A new Raymond mill and calcining kettle are being installed in the plaster plant.

In the board plant, the board machine is being lengthened 125 ft., and the capacity of the boiler will be doubled. A new tube mill also will be installed.

The National City plant also has been improved with a new boiler, a new stack, and an extension of the boiler house.

Dissolve Partnership

MESHBERGER BROTHERS STONE Co., Berne, Ind., with Harry and Oscar Meshberger as partners and owners, has been dissolved as a partnership. Harry takes over the quarry at Columbus, Ind., formerly owned by Meshberger Brothers, and the Meshberger Brothers Stone Co., a corporation, will continue to operate the quarry at Berne and the one in Blue Creek Township acquired in 1932. The name of the company and personnel will remain the same with the exception of Harry Meshberger who had been president of the concern for many years.

Open Ready Mix Plant

LEWIS & WEST TRANSIT MIX CONCRETE Co., El Dorado, Kans., has been organized by Ralph E. Lewis, formerly a lieutenant in the Army Air Forces, and Milo E. West, a lieutenant with the Navy Seabees. Charles L. Lewis, veteran contractor, is the father of Ralph E. Lewis and the stepfather of Milo E. West. The plant now in operation has a capacity of about 70 cu. yd. per day under its present set-up, according to a local report.

Start Sand Dredging

DREDGING operations have been started along the Republican river northwest of Junction City, Kans., by Lester J. Auld, Clarence E. Jameson, and Clarence E. Pancake, in partner-

ship. Mr. Jameson will be in charge of sales, Mr. Pancake is supervising sand and gravel pumping and plant operations, and Mr. Auld is handling the office work. An 8-in. pump is used for dredging.

Erect Ready Mix Plant

THE BREMSER COAL & SUPPLY Co., under the management of C. N. Klein, will erect a ready mixed concrete plant on the site of the old Wheeling & Lake Erie freight depot in Norwalk, Ohio. The new plant will have a capacity for 500 tons of aggregates in various sizes and 700 bbls. of cement. The cement will be handled in bulk from closed hopper type cars. Aggregates can be unloaded and handled into the plant at the rate of a carload every half hour. Another mixer truck will be added to the fleet.

New Cement Plant for Ecuador

PLANS are now going forward to construct a new cement plant in Ecuador near the city of Riobama. This location is near large deposits of limestone and clay and not far from waterfalls and a lignite deposit which would supply power and fuel. The plant would have a capacity of about 200 tons per 24 hours, and would involve an expenditure between \$750,000 and \$1,000,000. Production of cement rose from 1,785 short tons in 1942 to about 42,000 tons in 1945, but it is still insufficient to meet all needs. Three-fourths of the imports have come from the United States and the rest from Great Britain.

Sell Agstone Concern

JOHN F. GROTH & Son, Cedarburg, Wis., agricultural limestone producers, have sold their interests to James R. Vivian, until recently superintendent of the Smith Steel division of Grede Foundries in Milwaukee.

Reopen Monolith Plant

MONOLITH PORTLAND MIDWEST Co., Laramie, Wyo., was reopened in January after a shutdown since November, 1945, for repairs and maintenance. All employees were kept on the payroll to make the repairs.

Build Gravel Plant

HERBERTSON SAND & GRAVEL Co. has announced through R. J. Herbertson, president, that a new sand and gravel plant will be built at Littleton, Colo.



Hauling rock to barges for jetty construction, Basalt Rock Co., Napa, Calif.

Washington News

(Continued from page 51)

would probably have to close down after February 15, if no relief was granted. As a result of this hearing, the Columbus Housing Commission passed a resolution asking OPA to report what became of the application and demanding action on the request for a higher ceiling price.

Grant Ready Mix Price Increase

The regional office of OPA at Cleveland, Ohio recently granted a 40c a cubic yard increase in the maximum prices for ready mixed concrete sold in Franklin County to all sellers. The increase in price was found to be necessary by reason of increased cost of labor and equipment.

Sell New York Firm

O'BRIEN BROTHERS, INC., New York, N. Y. has announced the sale of its quarry property at Cold Spring on the Hudson River and the sand and gravel property at Port Washington to New York Trap Rock Corporation. This will increase the present crushed stone capacity of New York Trap Rock Company from 4,000,000 cu. yd. per 8-hour day to 4,800,000 cu. yd. When the new sand and gravel plant is finished in June, annual production of sand and gravel will be in excess of a million cubic yards. O'Brien Brothers, Inc., will retire from the crushed stone and sand and gravel business, but will continue to operate its fleet of tugs, scows, barges and other floating equipment and a shipyard on Staten Island.

Katterjohn Expands Plant

THE KATTERJOHN CONCRETE PRODUCTS Co., Paducah, Ky., will build a concrete products plant at Owensboro which will cost about \$65,000. Chas. W. Taylor is in charge of construction which it is anticipated will be

completed by May 15. Geo. W. Katterjohn, Jr., president of the company, has advised that a number of improvements also have been completed at the plant in Paducah. The company operates another plant in Nashville, Tenn., where concrete burial vaults are manufactured.

Purchase Quarry

THE MAUMEE STONE Co., Maumee, Ohio, recently incorporated, has purchased a quarry west of the city and plans to start crushing operations by May 1. Sherman E. Johnson is president of the company; his son, Elmer J. Johnson, is vice-president, and A. E. Murbach is secretary.

Northwest Pre-Mix

ROBERT DOTEN, recently released from the Army Engineers, is head of a new pre-mix concrete plant in Pullman, Wash. The plant may later make concrete block in addition to the ready-mixed concrete. Mr. Doten has been working on the construction of concrete invasion barges for the Army, and before the war he was affiliated with Barlow & Co. pre-mix concern of Tacoma, Wash.

Add Batching Plant

BASIN CONCRETE PRODUCTS Co., Ephrata, Wash., has installed two new units, a Butler batching plant for ready-mixed concrete and a Sherman concrete pipe manufacturing machine. Owners of the company are W. Turner Clark and Arthur Sather.

Purchase Stone Plant

NEW YORK TRAP ROCK Co., New York, N. Y., recently acquired through lease, with an option to purchase, the old Norton quarry property at Cobleskill, N. Y., where it is planned to build a plant for the production of agricultural limestone. Crushed stone for railroad ballast and for highway and other purposes also will be produced.

Many New Block Companies Starting Operation

WOOSTER CONCRETE PRODUCTS Co., Wooster, Ohio, owned and operated by Guy C. Horn, plans to build a concrete block plant with a capacity of 1500 block per day.

EMPIRE CONCRETE PRODUCTS Co., Moscow, Idaho, is the name of a new concern which is putting up a \$25,000 plant. Owners are Fred H. Simkin and Leo F. McCarty.

BUILDERS CONCRETE PRODUCTS Co., Portland, Ore., is scheduled for opening in the middle of February. According to F. I. Newman, owner, the plant will have a large capacity for the production of concrete brick and block.

THE FRANKLIN CONCRETE PRODUCTS CORPORATION, Franklin, Va., is building a new plant for the manufacture of concrete block, pipe, and brick. Robert C. Ray is to be president and manager. Pipe sizes from 8-in. to 48-in. diameter will be made.

THE CONCRETE PRODUCTS Co., Winston-Salem, N. C., is a new company operated by two ex-servicemen, A. J. Ayotte, formerly of Wilmington, and Homer J. Ingle of Winston-Salem. Mr. Ayotte who will be manager of the company was formerly with Lehigh Portland Cement Co., at Richmond, Va.

THE GAFFNEY CONCRETE PRODUCTS Co., Gaffney, S. C., is setting up a plant for the manufacture of lightweight vermiculite concrete slabs for siding, roofing, panels and insulation.

CAROLINA CEMENT PRODUCTS Co., Hendersonville, N. C., is planning to build a concrete brick manufacturing plant. A. M. Green, owner of the Carolina Trading Co., who organized the company, announced that later drain pipe as well as concrete garden furniture would be produced.

CONCRETE PRODUCTS Co., Billings, Mont., plans to erect an \$80,000 concrete block plant with a capacity of 4500 concrete block daily. Besser Super Vibrapac equipment has been purchased. Rockwood Brown, formerly with the Montana State Highway Commission, is interested in the project.

THE TOMDON Co., Lenoir, N. C., has been organized by Donald T. Beish and Thomas C. Boggs, recently discharged from service, for the manufacture of concrete masonry units.

HOLDREGE CONCRETE Co., Holdrege, Nebr., has started production of concrete block.

AUBURN CONCRETE PRODUCTS Co., Auburn, Ind., will start operations March 1 with A. L. Hooker and George Simanton as owners. Mr. Simanton will be general manager.

COLBY CONSTRUCTION PRODUCTS Co., Colby, Kans., is the name of new manufacturer of block. O. A. Neeley will be chief engineer and general



Main plant of Caldwell Stone Co., Danville, Ky. Primary crusher at right. Recent additions to equipment will increase capacity to 100 tons per day

manager. It is later planned to make concrete pipe.

TODD CONCRETE BLOCK Co., Charlotte, N. C., has been organized by Wayne A. Todd, Sr. His son, Wayne A. Todd, Jr., recently discharged from the army, will manage the business.

CLINTON CONSTRUCTION Co., Wilmington, Ohio, will build a plant for the production of both ready mixed concrete and concrete products to cost about \$150,000. The block plant will produce about 1,000,000 concrete block annually.

CONCRETE PRODUCTS Co., Lakeview, Ore., is building a plant for the production of concrete block and precast concrete units of all kinds.

A. J. McMILLAN, formerly of Seattle, Wash., has announced that he will build a concrete products plant at El Centro, Calif. Concrete pipe and septic tanks also will be manufactured.

INSUL BLOCK & CONCRETE Co., Yakima, Wash., has started production of concrete block and ready mixed concrete. Fred E. Young is president of the company; B. F. Jacobs is vice-president; L. B. Vincent is secretary. Mr. Jacobs will manage plant operations.

Erect Sand Plant

HENRY THYGESEN, well-known contractor of Albuquerque, N. M., has purchased the property and leased the sand and gravel deposit formerly operated by Ascarate Grant at El Paso, Texas. The lease is for 15 years. Mr. Thygesen has constructed a modern sand and gravel plant which it is expected will be ready for operation early in March. He is also constructing a ready mixed concrete plant which will be in operation in May or June. Mr. Thygesen is sole owner and will operate under the name of El Paso Sand Products Co., El Paso, Texas. Maj. P. M. Crawford, recently discharged from the armed forces, will be manager of the plant.

Partnership Incorporates

CONCRETE MATERIALS AND CONSTRUCTION Co., Cedar Rapids, Iowa, which operated as a partnership, has been incorporated with a listing of \$1,000,000 in capital stock. Officers of the corporation are: H. D. Bellamy, chairman of the board; Sidney P. Moore, president; F. E. Bellamy, vice-president; K. K. Kinsey, secretary; Leonard Spaight, treasurer; Vernon H. Mussman, vice-president, and R. H. Neighbor, vice-president.

Buy Two Quarries

SOUTHERN AGGREGATES CORPORATION, Raleigh, N. C., has purchased two quarries in Guilford County near Greensboro, N. C., from the Guilquarry Stone Corporation for \$175,000. One of the properties is near

Stokedale, about 10 miles north of Greensboro, and the other is the Liberty Hill quarry just northeast of Greensboro. The Guilquarry property near Stokedale has been leased to the Woodleaf Stone Co., Woodleaf, N. C., with M. N. Hedrick in charge of operations. No plans have been made to operate the Liberty Hill quarry.

Cement Plant Improvements

LOUISVILLE CEMENT Co., Louisville, Ky., has announced through President Eugene D. Hill that a number of improvements will be made at the Speed, Ind., plant. New boilers will be installed, and modernization of the packing department will cost about \$420,000. Improvements at Milltown, Ind., call for an outlay of \$80,000. The three-year program will cost about \$1,500,000.

Sell Products Concern

CONCRETE PRODUCTS Co., Lebanon, Ind., has been sold by L. D. Shannon to Russell Stowers of Rockport, Ind. Mr. Shannon has been a pioneer manufacturer of concrete pipe as well as concrete masonry units.

Expand Stone Operations

STEVIA STONE Co., Richmond, Mo., owned by Jesse and Kenneth Steva, has announced an expansion program. A new agstone crusher, having a capacity of 90 tons an hour, has been installed. Other improvements include a loader with a capacity of 500 tons of rock per day, a vibrating screen, and a second 100-ton bin. Two new agricultural limestone haulage trucks have been added to the three older units, and two rock trucks for the quarry have been placed in service.

Surplus Sand Plant

A SILICA SAND PLANT at Eugene, Wash., operated during the war by the defense plant corporation and costing \$156,000, has been declared surplus and is available for sale or lease to private operators. The plant, having a capacity of 5000 tons of dry sand per month, is valued at \$4400 for the land, \$68,000 for the buildings, and \$83,000 for the equipment.

Veteran Opens Quarry

JACK LYTON, Ottumwa, Iowa, a captain in the war, plans to reopen the quarry downstream from the south approach of the Vine street bridge. The quarry was formerly operated by the county as a W.P.A. project. Limestone, blue sandstone and a deposit of gravel are located on the property. Road stone, agricultural limestone, and blue sandstone for insulation manufacturing purposes will be produced.

Win Safety Award

NATIONAL GYPSUM Co., Buffalo, N. Y., has announced that its National City, Mich., plant ranked fourth among 1300 Michigan plants in the Department of Labor's safety contest. The certificate of award was made for reducing the rate of accidental injuries by 76.5 percent during the first six months of 1945 in comparison with a similar period in 1944. C. E. Anderson is manager of this plant.

Buy Spreader Trucks

THE CARNEY Co., Mankato, Minn., has announced a new service. A fleet of limestone spreader trucks has been acquired by Lundin Construction Co., which operates the Carney quarry and is distributor of agricultural limestone in the Mankato district.

Pavement Yardage

AWARDS of concrete pavement for January, 1946, have been announced by the Portland Cement Association as follows:

SQUARE YARDS AWARDED	
Roads	946,485
Streets and Alleys	485,671
Airports	208,787
Total	1,640,913

COMING CONVENTIONS

American Concrete Pipe Association, Annual Convention, Edgewater Beach Hotel, Chicago, Ill., April 11 and 12, 1946.

American Concrete Pipe Association, Board of Directors' Meeting, Edgewater Beach Hotel, Chicago, Ill., April 9, 1946.

American Society for Testing Materials, Annual Meeting, Buffalo, N. Y., June 24-28, 1946.

National Concrete Masonry Association, Annual Meeting, Hotel Sherman, Chicago, Ill., March 12-14, 1946.

National Industrial Sand Association, Annual Meeting, The Homestead, Hot Springs, Va., May 15-16, 1946.

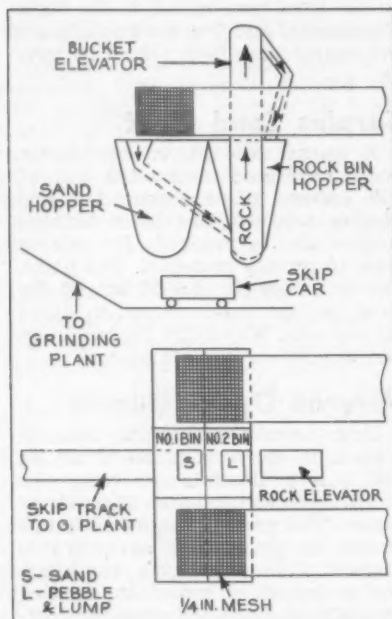
National Lime Association, Annual Convention, The Homestead, Hot Springs, Va., March 28-30, 1946.

HINTS *and* HELPS

Practical Ideas Developed by Operating Men

Transfer Loading Tipple

HOOVER-MASON PHOSPHATE CO., Mount Pleasant, Tenn., now employs truck haulage for transporting raw material from scattered phosphate



Plan and elevation details of tippie for handling phosphate rock

deposits to the mill, supplementing rail transportation. The narrow gage track system of haulage, long in use, is employed at the large deposits under excavation while the trucks haul from small, scattered deposits, some as far as five miles from the plant.

Building and maintaining roads for the trucks is done with a D-14 International tractor, having a bull-dozer attachment and an Adams motor patrol grader. Surfacing material taken from the pits consists of about 30 percent clay and 70 percent limestone.

At a new large deposit recently opened and located about five miles from the mill, a combination of locomotive haulage from the pit to the mill and trucks to fill a transfer loading tippie at the pit is employed. Details of this tippie are shown in the illustration.

Reclaim Sprocket Wheels

In the accompanying illustrations may be seen how welding was used to reclaim worn sprocket wheels. When parts were almost impossible to obtain, the welder very often was called in to prevent complete breakdowns in operation.

Fig. 1 shows a badly worn sprocket in an upright position and a duplicate of the same with the teeth cut off close to the reinforcing spokes by a manual cutting torch. This is the first step in the reclamation.

The inside diameter of the spokes is 24 in. The outside diameter is 28 in. The next step is to flame-cut a larger washer to the above dimensions from $\frac{3}{8}$ -in. steel plate, then lay out the teeth on the washer. (This can be done easily by placing the old teeth on the washer and marking around them with a piece of soapstone, allowing of course for the worn spots.) The teeth are then cut out with a cutting torch. No special equipment is necessary—just an ordi-

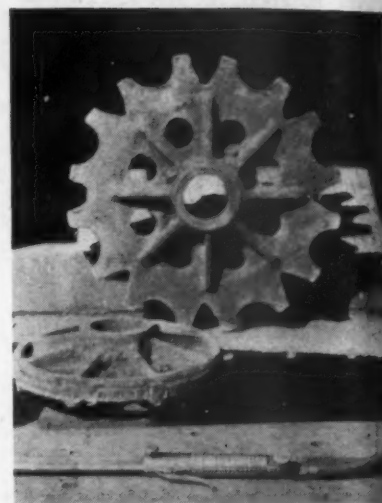


Photo courtesy Lincoln Electric Co.
Fig. 1: Above may be seen badly worn sprocket with teeth removed by cutting torch, shown in the foreground

nary hand torch, such as the one pictured in Fig. 1.

When this is accomplished, simply fit the washer to the wheel and weld, making a $\frac{1}{2}$ -in. fillet type weld on both sides. This should be done in two passes, using a $\frac{3}{16}$ -in. electrode for the first, and finishing with a $\frac{1}{4}$ -in. electrode.

The result, shown in Fig. 2, is a sturdy, extremely neat appearing job that can be turned out by any careful experienced operator.

The time involved was only 2 hours, 15 minutes; $6\frac{1}{2}$ lbs. of electrodes were consumed. For flame cutting 42 cu. ft. of oxygen and 16 cu. ft. of acetylene were used. Against this is the old method of building up the worn teeth which consumed approximately 25 lbs. of electrodes, 7 hours time, and costly grinding.



Truck being loaded with dragline at one of the more isolated deposits

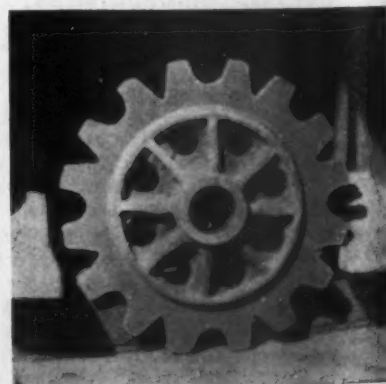


Photo courtesy Lincoln Electric Co.
Fig. 2: Rebuilt sprocket wheel which was done by fitting washer to wheel and welding, using $\frac{1}{2}$ -in. fillet type weld on both sides

Lubricating Wire Rope and Chain

As a large dredge operator, Victory Stone & Sand Co., Topeka, Kans., has given considerable thought to proper maintenance and inspection of its wire rope and chain because they are subject to abrasive wear and corrosive action operating in sand and water. Joe Roe, superintendent in charge of operation for the company, has the following interesting comments on his methods of getting the maximum service out of wire rope and chain.

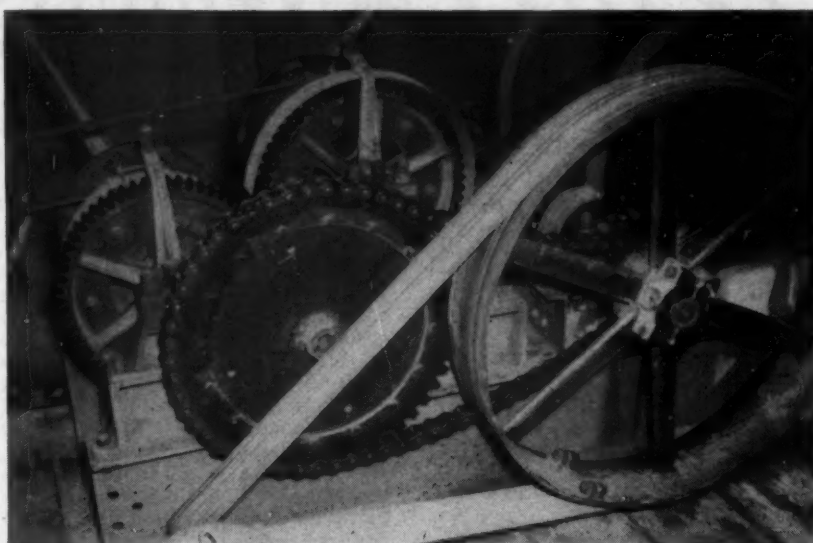
"Wire ropes come from the factory properly lubricated, with the dressing applied as the rope is made. This does not mean, however, that every rope is ready to take on every job without additional lubrication attention. Lubrication with us serves two purposes: as a machine, it keeps the rope running properly; it also serves to protect the rope against sand, silt and corrosion.

"Because each operating problem is a lubrication problem by itself, general hard and fast rules regarding types of grease or methods of application cannot apply. We depend on factory recommendations in each case.

"Except in rare instances we always clean and inspect our wire ropes before we grease them. We use a bath for applying hot lubricants, and have had good success applying heavier grease by hand (for elevator ropes, etc.). We get our best lubrication results on machine ropes by using a light oil and giving ropes more frequent applications. Too frequent applications of a lubricant will not damage a rope, but it is not a good policy to use too much of the lubricant or allow a surplus to remain on the rope when it is returned to the machine.



Applying heavy grease to an elevator cable by hand



One of the high speed roller chains on dredge boat. These chains are frequently removed, cleaned with a brush and kerosene or gasoline, and soaked in a light oil. After lubrication the chain is allowed to hang in order that excessive oil may drain off

"We keep on hand a grease recommended for ropes in storage and when any cable is retired from machine use, we clean it with a stiff brush and kerosene, give it a storage inspection, and a final protective lubrication. In 12 years we have had no ropes damaged while in storage.

"It is conservative to say that by using all preformed rope, and following factory recommendations as to method of greasing and type of lubricant, we get 75 percent more rope life.

Chain Lubrication

"To a great extent we follow the same policy on chain servicing and lubrication. We have found factory recommended service methods better and cheaper.

"With roller chains, whenever possible it is better to use a case. This protects the chain, is safer for workmen and is an aid to the lubrication job. We have found it is not a good policy to run a chain through an oil bath, as in the bottom of the chain case. The best method is to use a light oil and apply by drip.

"In our operation there is constant wear and damage from sand. For this reason we regularly take down our chains, clean them with kerosene or gasoline, make any repairs needed, and give the whole chain a thorough lubrication before returning it to the machine. For this after-cleaning lubrication we soak the entire chain in a light oil, let it hang to drain off the excess, and then wipe it with rags.

"None of our chain drives operate at a high enough speed to require a forced feed lubrication system. The digger chain which operates from the barge is the exception to our lubrication rule. Constant use at low speed



Wire rope in storage is treated with a special dressing. When any cable is retired from machine use, it is cleaned with a stiff brush and kerosene, given an inspection, and a final lubrication

and the action of the sand on the steel keeps the metal bright and free from corrosion. We have used this chain for 12 years without repairs or replacements. The 90-ft. chain is 8-in.—large enough to allow the sand and gravel to go through but small enough to keep out rocks which would clog and damage the line. We use no grease on this chain at all. Our elevator chains are G-111s with K-2 attachments every other link. For flight conveyors we use 8-30s—lay bushed."

Idaho Ready Mix Plant

A. J. CHAUSSEE & Co., Boise, Idaho, is building a sand and gravel and ready mixed concrete plant which will cost about \$37,500.

NEW

MACHINERY

Photo-electric Flame Failure Safeguard

COMBUSTION CONTROL CORPORATION, Cambridge, Mass., has developed a photo-electric apparatus, known as Fireye Flame-Failure Safeguard Type

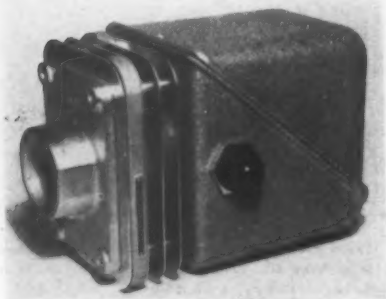


Photo-electric flame control

F18T, to provide explosion protection for all industrial and commercial oil and pulverized coal burners. When flame fails, it instantly cuts off fuel and sounds an alarm.

The apparatus consists of a photo-tube and amplifying system, housed in a dust-tight aluminum case. Mounted directly on the furnace wall, the control is aligned in a manner which permits the photo-electric cell to observe the flame through a 2-in. pipe connection which serves as both a sighting tube and a support for the equipment.

A clear pyrex filter keeps the equipment dust-tight, and is mounted on a hinged shutter which permits it to be cleaned without shut-down. A heat-absorbing filter in the lens system as well as an efficient baffle system protects it from all radiated heat. The specially designed photo-tube permits operation at high ambient temperature. Other features include a pilot light which can be viewed through an angle of 180 deg., and a time delay element which prevents the relay from dropping out during purely transient flame disturbances.

Wear Resistant Alloy

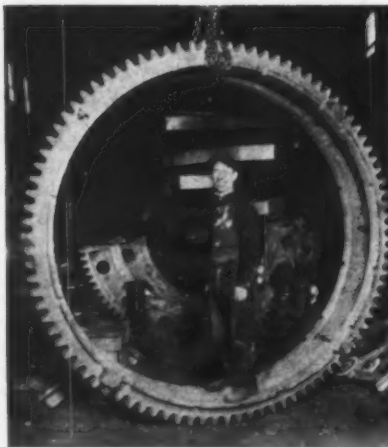
STROH PROCESS STEEL CO., Pittsburgh, Penn., has developed a process for casting a wear resistant alloy into the wearing surface only of the metal. It is done in one operation and handling when the steel is poured or casting is made. The depth, location, and hardness are under control of the operator. It is said that the alloy does not affect the remainder of the casting which is commercial cast steel

and is easily machined. The alloy cannot be machined, and is either hand-ground for smooth surface or machine-ground where accuracy is necessary.

The alloy work-hardens in service, and it is said to possess an extremely good coefficient of friction which is ideal for the grooves of sheaves. It resists heating and returns to the original hardness when casting is cold, a characteristic desired for shrinking gears on shafts.

Advantages claimed for this alloy apply to gears and pinions, spockets, sheaves, trunnion rollers (kilns, coolers, etc.), crusher rolls, crusher jaw plates, or any application where there is abrasive wear.

Another product made by this company, not Stroh process steel, is tires for kilns, coolers, etc., made in four segments or in halves with provision either for bolting the halves or for



Master gear for rotary kiln

welding the halves together. It is said that this type involves less labor cost in mounting on shell.

Pipe Line Strainer

J. A. ZURN MANUFACTURING CO., Erie, Penn., has developed a pressure and suction pipe line strainer which, it is claimed, maintains maximum liquid flow through piping systems while performing the necessary function of protecting pumps and moving parts of other vital equipment which might be injured by foreign particles. Maximum liquid flow is assured since the total area of the strainer basket perforations exceeds the area of the opening of the inlet by more than a 1.5 ratio.

On the cover of the unit is an air pressure relief valve that permits the escape of air that builds up within



Pipe line strainer for high and low pressures

the unit and impedes the operation of the strainer and other pipeline mechanisms. The unit also can be furnished with a magnetized strainer basket for intercepting ferrous metal particles too small to be intercepted by the strainer.

Strainers are available for either high or low pressures, high pressure strainers having a removable drop-bolted cover while low pressure strainers have yoke-clamp covers. The strainer basket is removable for cleaning, and the unit is also available with a cleanout plug for blow-down cleaning when practicable.

Gasket Replacement Tool

T. G. PERSSON CO., Bloomfield, N. J., has designed a special tool to open pipe flanges for gasket renewal. With the Flange-Jack, as it is called, pipe



Opening pipe flanges with special tool

flanges may be opened or closed without damage to flange faces. It is said that this tool is capable of opening joints against a load of 15 ton. As pressure is exerted, flanges open evenly and bolt holes are maintained in continuous alignment. Closures are accomplished in a similar manner.

Revolving Feed Distributor

THE DEISTER CONCENTRATOR CO., Fort Wayne, Ind., has developed its Concenco revolving feed distributor to automatically divide a liquid or mixture of solids and liquid, fed to the revolving cone, in a number of equal portions depending upon the



Feed distributor for liquids

number of compartments in the stationary splitting tank. This feed distributor is manufactured in several types.

Shovel-Trench-Hoe Unit

AMERICAN STEEL DREDGE CO., INC., Fort Wayne, Ind., has announced that it is now in production on a rubber-mounted, mobile crane unit, embodying power shovel, trench-hoe, dragline and clamshell.

Crane and attachments were designed by John D. Rauch, according to Walter W. Walb, general manager of the company. The test model has been in regular service for the past two years, including the handling of sand and gravel.

Advantages claimed for this versatile unit are the following: It has independent or simultaneous operation of boom, shovel or trench hoe, or propulsion mechanism. The unit can travel, boom, swing and hoist at the same time. It has a self-leveling chassis which permits operation on uneven ground. The power plant is a 62-hp. gasoline engine which drives all four wheels and the hoisting



Rubber-tire mounted crane, shovel or dragline

mechanism. Hoist drums are oversize, reducing cable wear. It has a short wheel base, 7 ft. 8 in., and operates at four travel speeds up to 15 m.p.h. Shovel, dragline and clamshell capacity is $\frac{1}{2}$ -cu. yd. Used as a crane, it has a capacity of 4 tons at 10-ft. radius. Boom length as crane, clamshell or dragline is 30 ft. Total weight is about 25,000 lbs., depending upon attachments.

Bantam Dragline

THE SCHIELD BANTAM CO., Waverly, Iowa, has designed and is now marketing a portable $\frac{1}{4}$ cu. yd. dragline which is said to have many uses where a large machine would not be practicable. It also is equipped with a trench hoe and other auxiliary tools for special jobs.

Vern Schield, the inventor, is well-known in Iowa as an operator of a quarry particularly valuable for agricultural limestone. The small dragline mounted on a truck was designed by Mr. Schield to load agricultural limestone haulage trucks at the quarry, but there was such a demand for the

units that a factory was built at the quarry for their manufacture.

The bantam dragline has a 25-ft. boom. In addition to the dragline bucket, the other tools include a trench hoe for digging ditches, excavating for house foundations, sewer, and water systems; a lattice-like skeleton bucket for digging in hard, dry ground; a "mole's paw" for wet, sticky soil. It also has been suggested that the dragline might be equipped with a tool for cleaning up around quarry stockpiles or gravel stockpiles.

Associated with Vern Schield is his brother Wilbur, as general business manager; H. V. Bannister, designing engineer and plant superintendent; and E. N. Neal, secretary-treasurer.

Weld-Spatter-Resistant

GENERAL ELECTRIC CO., Schenectady, N. Y., Electric Welding Division, has brought out two weld-spatter-resistant compounds. They are in powder form, ready to be mixed with water, and are identical in performance. The only difference between them is that the No. 9951 is nonadherent and can be readily removed with an air hose or a dry cloth, while the No. 9952 is semi-adherent but can be quickly and easily removed with a damp cloth or a direct stream of water.

Two desirable features are claimed for these compounds. One is that the surface of the work, even if slightly oily, does not require wetting before they can be applied. Another is that a special ingredient in the compounds eliminates the necessity of a water-soluble binder in order to obtain adhesion. Since the compounds are inert and cannot burn, they are completely smokeless.

Going Into Ready Mix

A. T. JONES, producing sand and gravel at Dennison, Texas, is planning to go into the ready mixed concrete business.



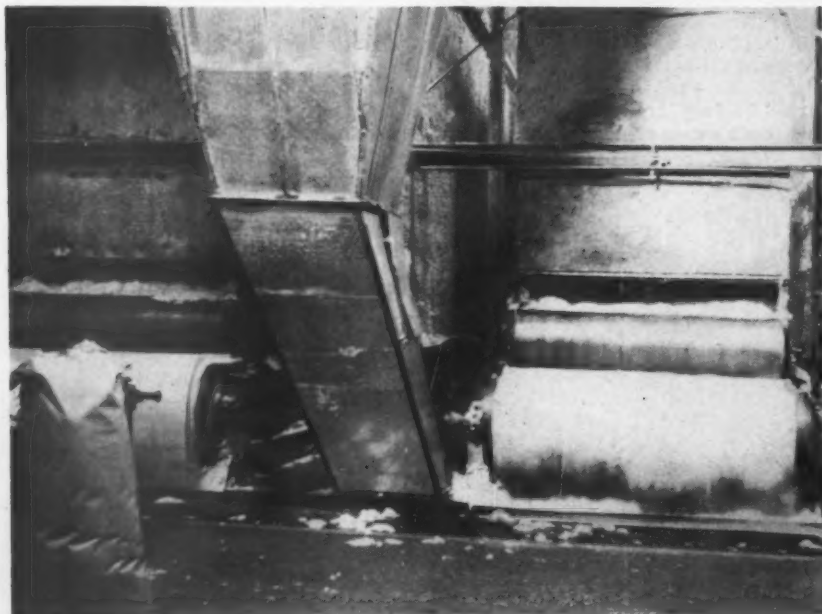
Loading an agricultural limestone spreader truck with bantam dragline



Bucket of blended stone is hoisted up monorail by electric motor and cable to top of cupola charging platform



Charging cupola with stone. Note mechanism for releasing gate at bottom of bucket



Rock wool from the blowing chambers dropping from steel mesh conveyor belt to conveyor at right angles below floor level for transfer to granulator and thence to rotary screen for removal of glass shot in bulk wool

Expand Rock Wool Capacity

Carney Rock Wool Co. will add two more cupolas to plant to meet heavy demand for insulating material in the post-war building era

By RALPH S. TORGERSON

EVER SINCE the first cupola for the manufacture of rock wool was started November, 1939, the Carney Rockwool Co., Mankato, Minn., has been pressed to meet the heavy demand for insulating materials. This demand has been greatly stimulated by the Federal Government's program urging industry and home owners to conserve fuel to the utmost. On top of this continuing need for fuel conservation will be the big market for rock wool from the enormous construction program now just getting under way.

To the present three cupolas, there will be added two others and one additional machine for the manufacture of bats will supplement the present machine. It is anticipated that the demand for bats will be accelerated during the post-war construction period as this type of insulating material will be used more extensively than loose wool which is blown in between rafters and walls of older structures.

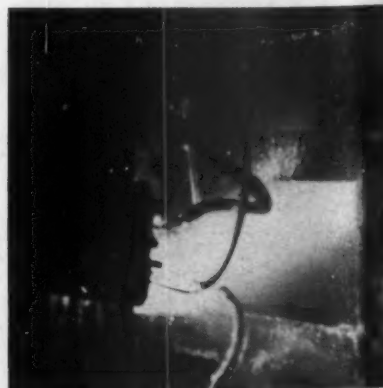
Now Operate Three Cupolas

The three cupolas have been built to the company's own design. Each cupola has a production of 33 tons a day, working three shifts of eight

hours and six days a week. Raw material is a blast furnace slag blended with a shale to secure the desired type of fiber having the greatest insulating value with a minimum production of shot. Chief Chemist Wm. C. Duane of the Carney companies supervises the chemical analyses for the rock wool company.

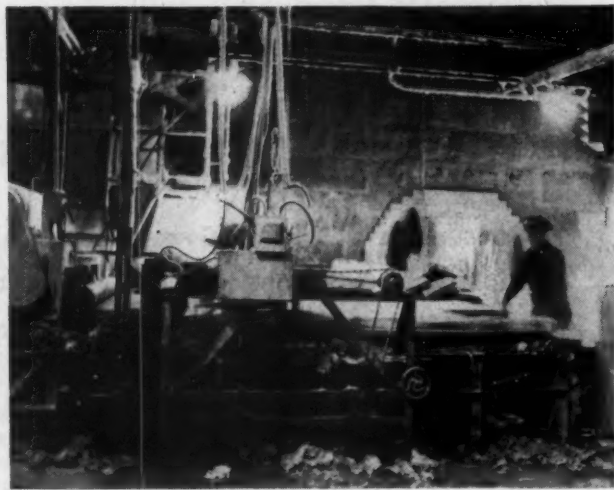
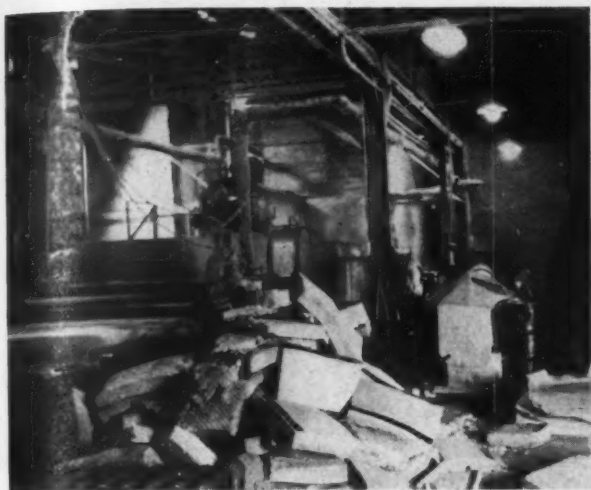
Slag, received in railroad freight cars on a track adjacent to the plant, is stockpiled by a portable conveyor within convenient reach of a monorail conveyor. A steel bucket, drawn by cable and electric hoist motor on the monorail inclining up to the charging floor, contains about 1000 lb. of slag and shale. As shown in the illustration, the loaded bucket, after being drawn to the charging floor, is propelled by hand over the monorail into the charging door opening at the top of the cupola. The charge of slag and shale is followed by a charge of 185 lb. of coke from a similar steel dump bucket, the operation being alternated to keep the cupolas adequately filled to provide a continuous flow of the melt. The water-jacketed cupolas are 50-in. diameter and are about 20 ft. high, including the stack.

There are four streams of molten material flowing from each cupola, with a jet of live steam impinging each stream at right angles, fiberizing the melt and blowing the fibers (wool) into the blowing chambers. Steam is furnished by two 100-hp. boilers. The hot rock wool fibers settle on a moving steel mesh conveyor. Two of the blowing chambers are for granulated wool which is treated with

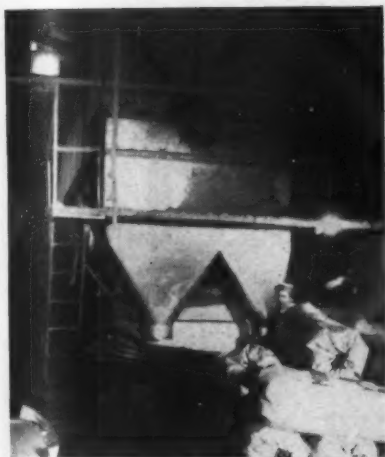


Looking down battery of cupolas showing streams of molten rock being blown with steam into blowing chambers

INSULATION



Left: Showing transverse cutting knife on bat machine to cut bats in required widths and lengths for packing. Right: End of bat machine where bats are packed in corrugated boxes. Cutting knife mechanism also may be seen

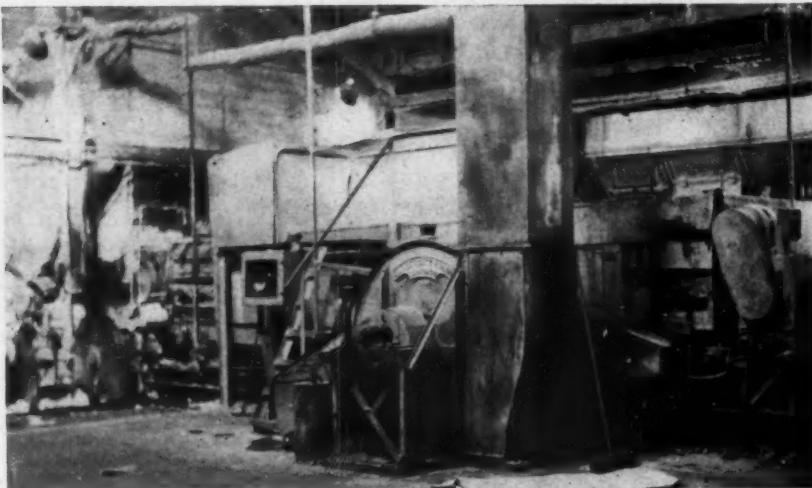


Above is the rotary screen which removes glass "shot" from the loose wool which is being sacked by the operator, below

oil to reduce the dust. A collector on the stack cuts down most of the light wool which may escape, but not all of it. It is planned to cut down this loss by creating a slight down draft over the bed of wool on the conveyor in the blowing chamber so that the wool itself will act as a filter taking out this valuable wool previously lost. When this is done a stack will not be required.

Wool which is to be granulated drops off the end of the blowing chamber conveyors onto a belt conveyor in a trough at right angles to the blowing chamber conveyors. This wool is taken to a granulator which consists essentially of a revolving drum with projecting rods moving between a fixed series of rods. A bucket conveyor elevates the granulated wool to a rotary screen which removes the shot. At the end of the conveyor the granulated wool drops to a pants-leg chute with two gates for filling sacks with granulated wool which is used

(Continued on page 63)



Product of one cupola goes to bat machine. View shows chamber for feeding rock wool to moisture-proofed paper. The treated rock wool moves forward to the transverse cutting knife where it is cut into bats



Stone for rock wool being selected in quarry

Sand Recovery

Use Conical Settling Tanks and Special Flume

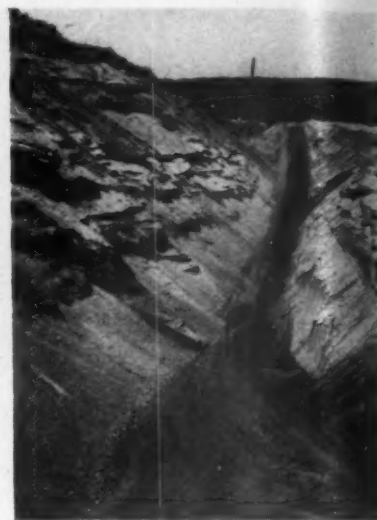
Consumers Sand and Gravel Co., Kalamazoo, Michigan, produces large variety of products with unusual arrangement of equipment

CONSUMERS SAND AND GRAVEL CO., Kalamazoo, Mich., has solved problems in connection with producing brick, masons' and concrete sands from a dry bank, by means of a special flume designed at the plant and tied in with a pair of 36-cu. ft. Tel-smith automatic conical sand settlers, in the flowsheet shown herewith.

Sand passing through the $\frac{3}{8}$ - x $\frac{7}{8}$ -in. rectangular openings of the first Simplicity vibrating screen after the primary jaw crusher is the feed

to the special flume. The wet screening operation is supplied with water up to 750 g.p.m. by a 5-in. centrifugal pump operating against an hydraulic head of 100 ft., the source being a nearby lake.

The flume is of $\frac{1}{8}$ -in. sheet steel, 18 in. wide by 18 in. deep with two flow decks, one of which is 9 in. below the top of the sides. The flow from the vibrating screen is delivered to this deck which has welded in it three 18- x 18-in. perforated plate



Recover material for plant with slackline cableway excavator

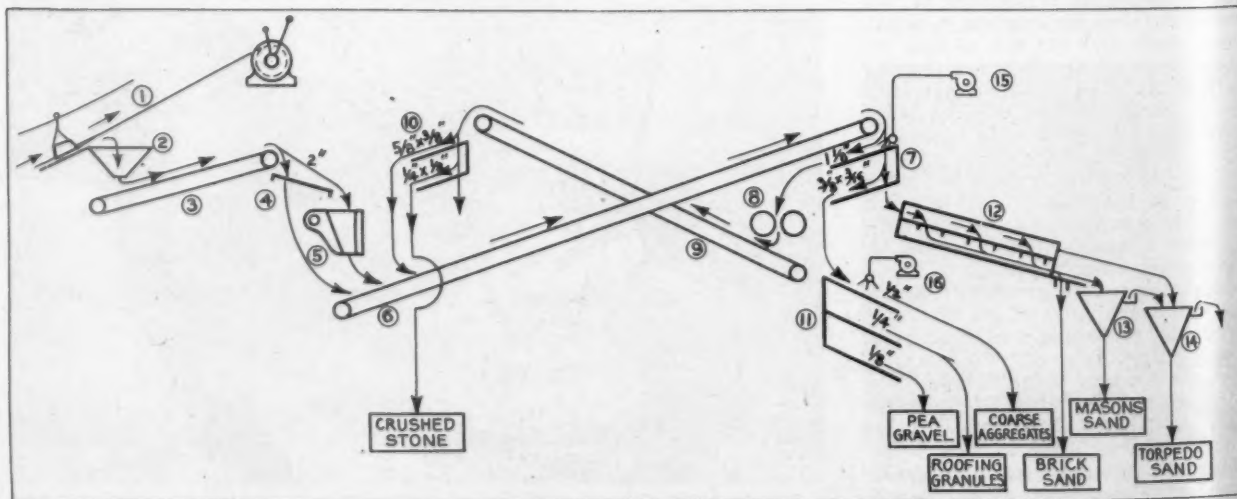
sections spaced at 16 in. and having $\frac{1}{8}$ -in. round openings. The coarse fraction is delivered to the second of the pair of conical settlers (see No.



Main conveyor belt with crusher house to the right, vibrating screen and hopper for crushed stone in the center



To the left, R. Klepper, part owner, and Walter H. Yount, superintendent



Flowsheet of sand and gravel plant washing and screening operations

SAND RECOVERY



Screening and washing plant. Screen house is to the left with flume showing at extreme left, center. In the middle foreground may be seen roll crusher housing

14 in flowsheet) while the fine fraction drops through the perforations to the lower deck. At the lower deck exit of the flume a perforated plate of the same specifications as those used in the upper deck, removes the undersize as brick sand before the flow enters cone (13). The underflow from this cone is masons' sand, while the fines overflow joins the top deck flume flow to enter cone (14). By

Key to Flowsheet: 1—2 cu. yd. Sauerman slackline scraper, 75-hp. American hoist, 500-ft. haul; 2—surge hopper, gravity feed; 3—24-in. inclined Link-Belt conveyor, 325-ft. centers; 4—bar grizzly, 4- x 8-ft.; 5—Acme jaw crusher; 6—24-in. Link-Belt conveyor, 200-ft. centers; 7—Simplicity vibrating screens in parallel, two 3- x 6-ft.; 8—Wisconsin double roll crusher, 18- x 36-in.; 9—24-in. return conveyor belt; 10—Double-deck, Simplicity vibrating screen, 2- x 6-ft.; 11—Simplicity vibrating screen, 3- x 6-ft. triple-deck; 12—separating flume; 13 and 14—Tel-smith automatic sand settlers, 36-cu. ft.; 15—Platt centrifugal pump, 5-in., 750 g.p.m.; 16—Amsco centrifugal pump, 4-in., 450 g.p.m.

regulating the flow of fresh water from the pump and adjusting the cones, differences in the fineness characteristics of the deposit can be overcome to produce reasonably uniform products. At a total production of from 75 to 100 t.p.h. the brick sand production will be 10 to 15 t.p.h. and that of masons' sand 20 to 25 t.p.h. Other sizes made as indicated by the accompanying flowsheet are crushed stone chips, city building and paving gravels, and other washed aggregates.

Joint owners of the plant are R. Klepper, A. Klepper and R. H. Butcher. Walter H. Yount is superintendent.

Start Rock Wool Plant

THE WEATHERMASTER MANUFACTURING Co., Tonganoxie, Kans., planned to start production of rock wool on February 15, according to C. W. Thomas, manager. The company will make several types of rock wool as well as a roofing material from by-products.



Conveyor belt from feed hopper. Crusher house is to the extreme left

Rockwool Manufacture

(Continued from page 61)

for blowing insulation in older buildings.

Bat Machine

A third cupola supplies molten rock for the bat machine. This wool is treated with a synthetic resin to bind it. Wool from the blowing chamber moves over the steel mesh conveyor to another section of conveyor where it passes onto a sheet of paper fed from a roll, and then is compressed slightly by rolls to uniform thickness. This paper is tarred on one side to prevent moisture penetration. As the rock wool to be made into bats reaches the end of the conveyor it is cut into desired sizes for packing by a revolving circular blade which traverses across the sheet of wool. The wool bats slide from the conveyor to a table from which the pieces are picked up and packed in corrugated boxes for shipment. The bat manufacturing machine produces about 25,000 sq. ft. of full thick bats in about eight hours.

The rock wool company has mainly the same officers as the cement company. Albin Anderson is superintendent of the rock wool plant.

Cement Production

BUREAU OF MINES reports that production of finished cement during November, 1945, totaled 10,705,000 bbl. or 29 percent above the total reported in November, 1944. Although the November, 1945, production represents a decrease of 399,000 bbl. from the year's record output in October, it is higher than the 1935-39 average for November. All districts, in November, 1945, show an increase in production over that reported in the corresponding month of 1944. The increases range from 0.3 percent in Oregon-Washington to 53 percent in Texas and 106 percent in Puerto Rico. Mill shipments of 10,342,000 bbl. were 40 percent above those reported in November, 1944. The decline of mill stocks continued and the November 30, 1945 total of 12,748,000 bbl. is 25 percent below that reported in the corresponding month of the previous year.

The following statement gives the relation of production to capacity, and is compared with the estimated capacity at the close of November, 1945, and of November, 1944.

RATIO (PERCENT) OF PRODUCTION TO CAPACITY					
	Nov. 1944	Nov. 1945	Oct. 1945	Sept. 1945	Aug. 1945
The month...	42.0	54.0	55.0	50.0	49.0
12 months...	38.0	42.0	41.0	40.0	40.0

New Excavator

INTERNATIONAL MINERALS & CHEMICAL CORP., Chicago, Ill., has installed a new dragline excavator in its Peace Valley phosphate deposit, Bartow, Fla.

Crushed Stone

Producers Swap Ideas on Operation

National Crushed Stone Association convention reports good business prospects; addresses cover OPA pricing policy, labor problem, and sales promotion

APPROXIMATELY 500 were in attendance at the 29th annual convention of the National Crushed Stone Association, held January 28-30, at the Netherland Plaza hotel, Cincinnati, Ohio. Attendance at the industry's first postwar convention was remarkable, considering travel difficulties and restrictions necessarily placed on accommodations. Emphatic testimony to the value of industry conventions in the minds of producers was obvious from the large number participating in discussion at the respective meetings. Approximately 100 stayed to attend the first annual convention of the Agricultural Limestone Division of the National Crushed Stone Association, January 31 and February 1, at the Gibson hotel.

A goodly number of producers were accompanied by sons recently dis-

charged from the armed services, most of whom had been associated in the business prior to entering the service. There also was an excellent representation of operating men who swelled the attendance at a special meeting for the informal discussion of operating problems participated in by producers and equipment manufacturers.

Eight Ex-Presidents Attend

Eight of 11 living ex-presidents of the National Crushed Stone Association were on hand to participate in the meetings. They were Otho M. Graves (1925-28), W. F. Wise (1929-30), A. L. Worthen (1931-33), Russell Rarey (1934-35), H. E. Rodes (1936-37), J. A. Rigg (1940-41), Wm. M. Andrews (1942-43) and the retiring president F. O. Earnshaw (1944-

45). John Rice (1920) and E. J. Krause (1921) were absent due to illness and the first president, A. J. Blair (1918-19) is no longer actively engaged in the crushed stone business.

Aside from a full program of convention sessions, the traditional greeting luncheon was held, a general luncheon with a special feature, the annual banquet and the annual breakfast business meeting of the Manufacturers' Division. Appropriate entertainment was scheduled for the ladies.

New Officers

G. A. AUSTIN, president, Consolidated Quarries Corp., Decatur, Ga., was elected president of the Association to succeed F. O. Earnshaw. Regional vice-presidents are F. W. Schmidt, Jr. (Eastern); T. C. Cooke



Banquet was one of the spotlight events of the National Crushed Stone Association convention

CRUSHED STONE

(New England); Paul M. Nauman (Midwestern); W. T. Ragland (Southeastern); Verne C. Morgan (Central); W. H. Wallace (Northern); A. J. Wilson (Western); and E. Eikel (Southwestern). Mr. Morgan and Mr. Wallace are newly-elected regional vice-presidents. James Savage, treasurer; J. R. Boyd, administrative director; A. T. Goldbeck, engineering director; and J. E. Gray, field engineer, comprise the balance of the officers.

The Board of Directors is as follows:

V. C. MORGAN, Louisville, Ky., and W. H. Wallace, Bay Port, Mich., were elected regional vice-presidents for the Central and Northern regions; respectively. Vice-presidents for the other regions are: Eastern—F. W. Schmidt, Jr., Morristown, N. J.; New England—T. C. Cooke, Swampscott, Mass.; Midwestern—Paul M. Nauman, Dubuque, Iowa; Southeastern—W. T. Ragland, Raleigh, N. C.; Western—A. J. Wilson, Watsonville, Calif.; and Southwestern—E. Eikel, New Braunfels, Texas.

There were several new appointments to the executive committee, now under the chairmanship of President G. A. Austin. The committee is as follows: G. A. Austin, chairman, Decatur, Ga.; F. O. Earnshaw, Youngstown, Ohio; Otho M. Graves, Easton, Penn.; Russell Rarey, Columbus, Ohio; F. W. Schmidt, Jr., Morristown, N. J.; Stirling Tomkins, New York, N. Y.; W. F. Wise, Dallas, Texas; A. L. Worthen, New Haven, Conn.; S. P. Moore, Cedar Rapids, Iowa, representing the Agricultural Limestone Division; and J. B. Terbell, New York, N. Y., representing the Manufacturers' Division.

Other officers are James Savage, Buffalo, N. Y., treasurer; J. R. Boyd, administrative director and secretary; A. T. Goldbeck, engineering director;



Verne C. Morgan, Kentucky Stone Co., Louisville, Ky., new regional vice-president, N.C.S.A.



Eight ex-presidents of the National Crushed Stone Association. Left to right, seated: W. F. Wise, Fred O. Earnshaw, H. E. Rodas, A. L. Worthen, Otho M. Graves, and Russell Rarey. Standing are J. A. Rigg, left, and Wm. M. Andrews

J. E. Gray, field engineer. Otho M. Graves represents the National Crushed Stone Association on the executive committee and board of di-



Paul M. Nauman, Dubuque Stone Products Co., Dubuque, Iowa, member of the Board of Directors, National Crushed Stone Association and Agricultural Limestone Division

rectors of the Agricultural Limestone Division.

Board of Directors

The board of directors is as follows: G. A. Austin, Chairman, Consolidated Quarries Corp., Decatur, Ga.

Wm. M. Andrews, Union Limestone Co., New Castle, Penn.

L. J. Bogley, Blue Ridge Stone Corp., Roanoke 1, Va.

H. H. Brandon, Melvin Stone Co., Melvin, Ohio.

J. E. Bryan, Bryan-Monroe Co., Raleigh, N. C.

J. Reid Callanan, Callanan Road Improvement Co., South Bethlehem, N. Y.

W. N. Carter, National Stone Co., Joliet, Ill.

A. J. Cayia, Inland Lime and Stone Co., Gulliver, Mich.

H. N. Clark, Dolomite Products Co., Inc., Rochester, N. Y.

T. C. Cooke, Lynn Sand & Stone Co., Swampscott, Mass.

F. O. Earnshaw, Carbon Limestone Co., Youngstown, Ohio.

Arthur F. Eggleston, John S. Lane & Son, Inc., Meriden, Conn.

E. Eikel, Servtex Materials Co., New Braunfels, Texas.

Otho M. Graves, General Crushed Stone Co., Easton, Penn.

G. F. Hammerschmidt, Elmhurst-Chicago Stone Co., Elmhurst, Ill.

R. G. L. Harstone, Canada Crushed Stone, Ltd., Hamilton, Ontario, Can.

J. L. Helmlich, LeRoy Lime & Crushed Stone Corp., LeRoy, N. Y.

R. P. Immel, American Limestone Co., Knoxville, Tenn.

N. E. Kelb, Cumberland Quarries, Inc., Indianapolis, Ind.

E. J. Krause, Columbia Quarry Co., St. Louis, Mo.

J. C. Lauber, Trap Rock Co., Minneapolis, Minn.

M. E. McLean, East St. Louis Stone Co., East St. Louis, Ill.

V. C. Morgan, Kentucky Stone Co., Louisville, Ky.

Paul M. Nauman, Dubuque Stone Products Co., Dubuque, Iowa.

W. T. Ragland, Superior Stone Co., Raleigh, N. C.

H. E. Rainer, Federal Crushed Stone Corp., Buffalo, N. Y.

Russell Rarey, Marble Cliff Quarries Co., Columbus, Ohio.

J. A. Rigg, Acme Limestone Co., Fort Spring, W. Va.

H. E. Rodas, Franklin Limestone Co., Nashville, Tenn.

W. R. Sanborn, Lehigh Stone Co., Kankakee, Ill.

James Savage, Buffalo Crushed Stone Corp., Buffalo, N. Y.

F. W. Schmidt, Jr., North Jersey Quarry Co., Morristown, N. J.

A. T. Smith, Rock Hill Quarries Co., St. Louis, Mo.

O. M. Stull, Liberty Limestone Corp., Buchanan, Va.

Stirling Tomkins, New York Trap Rock Corp., New York, N. Y.

W. H. Wallace, Wallace Stone Co., Bay Port, Mich.

W. S. Weston, Weston & Brooker Co., Columbia, S. C.

D. L. Williams, Virginian Limestone Corp., Ripplemead, Va.

A. J. Wilson, Granite Rock Co., Watsonville, Calif.

W. F. Wise, Southwest Stone Co., Dallas, Texas.

A. L. Worthen, New Haven Trap Rock Co., New Haven, Conn.

Representing the Agricultural Limestone Division

James Eells, Basic Dolomite, Inc., Cleveland, Ohio.

E. E. Haapala, Zumbrota, Minn.

S. P. Moore, Concrete Materials & Construction Co., Cedar Rapids, Ia.

Representing the Manufacturers' Division

Milo A. Nice, Hercules Powder Co., Wilmington, Del.

L. W. Shugg, General Electric Co., Schenectady, N. Y.

J. B. Terbell, American Manganese Steel Division, The American Brake Shoe Co., New York, N. Y.

BUSINESS CONDITIONS

FRED O. EARNSHAW called the National Crushed Stone Association convention to order. He presented a report on business conditions during 1945 and the outlook for 1946, from a summary of reports compiled by the regional vice-presidents. Paul M. Nauman, Dubuque, Iowa, had reported that volume of business was about the same in 1945 as in 1944, in the midwestern region with no appreciable change in prices. There is good prospect for a heavy construction program in this territory, including highway and airport paving, as well as for ready-mixed concrete plant demands and agricultural limestone, provided roadside production does not interfere.

F. W. SCHMIDT, reporting for the Eastern division, said that volume of crushed stone business was about 10 percent less and that the price level was about the same in 1945 as it was in 1944. Estimates showed that about 35 percent of present plant capacity was utilized in 1945 to take care of all demands. Mr. Schmidt believes that the crushed stone business should increase in 1946 over 1945, although some contracts for road construction are being held up because contractors are reluctant to bid due to uncertain cost factors.

Distribution of business in 1945 was 35 percent for highway construction and maintenance; 20 percent railroad ballast; 5 percent building construction; 15 percent chemical and metallurgical uses; 5 percent agricultural limestone; and 20 percent for other uses including airport construction and jetty stone. The distribution in 1946 for these markets is expected to be 45 percent, 15 percent, 10 percent, 3 percent, 2 percent and 25 percent, respectively.

E. EIKEL had reported that the volume of crushed stone business was slightly higher last year in the Southwestern region. Prices averaged off a percent or two. Plant capacity was far in excess of demand and output

more than equal to it even though the manpower situation was bad. Mr. Eikel anticipates a good year in the sale of materials for highway and railroad construction and for maintenance purposes.

A. J. CAYIA reported the volume of business was up 10 percent in 1945 over 1944 in the Northern region and will probably increase in 1946. Greatest demand appears to be in the very small sizes largely for patching on highways and streets.

T. C. COOK reported, for the New England area, a slight increase in 1945 over 1944. Prices were the same except for the Connecticut producers, who were allowed a 20 percent increase by O.P.A. beginning June 10. Demand in 1945 was about 40 percent of capacity. Mr. Cook said that all quarries expect increased business in 1946 and some expect to operate at full capacity.

W. T. RAGLAND reported that the volume of business was somewhat larger in 1945 over 1944 in the Southeastern region, with very little change in prices. Production averaged about 75 percent of plant capacity. He expects an increase in 1946, dependent mostly on the labor situation.

RUSSELL RAREY, Columbus, Ohio, stated that the supply of labor should be somewhat easier but wage scales will be higher and working conditions somewhat more restrictive due to governmental support of Union demands. He said that efficiency of labor should be increased due to the slightly better labor supply.

J. A. RICE of Fort Spring, W. Va., reported that if highway and other construction is resumed, there should be some increase in volume in 1946 over 1945.

R. P. IMMEL, Knoxville, Tenn., reported that volume of business in 1945 was the same as for 1944 and that the price level was the same.

Mr. Earnshaw reported on conditions in northeastern Ohio and western Pennsylvania. He said that high-



William H. Ruby, Acme Limestone Co., Ft. Spring, W. Va., another returned veteran

way and marketing conditions were very much similar to 1944. There was very little new construction and the main bulk of tonnage was in small sizes for patching and surface treating. Agricultural limestone business was off about 15 percent partly due to excessive wet weather in the early Spring. Prospects for 1946 seem a little better than 1945. All in all, he stated, it measures up to an average of the past three years.

Mr. Earnshaw concluded with the remark that the industry should enter the new year with confidence and trust that the year 1946 will at least be the beginning of better times.

Engineering Director's Report

A. T. GOLDBECK, Engineering Director, in his annual report, stated that the engineering work has been directed along lines which, in general, have not departed much from those developed in the past. Specifications have been written for such widely diverse structures as concrete dams and asphaltic concrete pavements. Conferences have been attended with State Highway Departments for the purpose of endeavoring to obtain equitable and fair specifications. In addition, Mr. Goldbeck said "we have engaged in technical writing for the industry and have delivered technical papers before national organizations."

Laboratory research has included 16 different projects, which included tests on subgrade pressure distribution, development of suitable tests on bituminous pavement mixtures to determine stability and durability values of any particular mixture in comparison with others, a series of concrete tests which led to the method of proportioning concrete now used, and others.

Individual producers have been served also, said Mr. Goldbeck. They



Canada Crushed Stone Co., delegation: Left to right, R. W. Cunningham, R. G. L. Harstone, and G. Gilbertson

have been informed about the N.C. S.A. method of proportioning concrete, have been informed of the relative value of angular particles versus rounded particles for traffic bound construction, and have been given the most favorable gradations for bituminous screenings mix. Articles have been published during the year, some of which have been requested by colleges and engineering organizations. Mr. Goldbeck said that "our methods are being written into engineering textbooks by at least four different authors."

The Association has cooperated in writing new national specifications. Field trips have been made to solve specific difficulties and to help producers in a number of different ways.

Mr. Goldbeck concluded with the statement "there is a tremendous pent-up demand for our products. We see, in the making, large programs of construction involving highways, airports, flood control, and power structures, buildings and construction work of every variety—all requiring crushed stone. Undoubtedly, these will bring many new problems to our industry, many of them of a technical nature. We shall consider it a privilege if we are given the opportunity of helping our members overcome any technical difficulties which may arise when this huge program gets under way."

J. E. GRAY, formerly Testing Engineer and now Field Engineer, gave a report on his activities during the year. He stated that his work has been divided into two spheres: one offering technical assistance to producers at their request on any engineering problems that may arise; and two, making known the results of research. He said that very few requests have been made for assistance on engineering problems. He mentioned some of the field trips that have been made during the year, such as one to Boston where he appeared before a meeting of the New England Testing Engineers to discuss specifications and sizes of stone. He also appeared before the New York Crushed Stone Association and the Kentucky Crushed Stone Association, giving a talk on the method of proportioning concrete at the latter meeting.

Mr. Gray said that it is proposed that talks be given to engineers on the method of proportioning concrete developed by the Association. He said that he will gladly give talks to any interested group and will cooperate with anyone desiring to plan meetings.

Administrative Director J. R. Boyd, in his report, dealt primarily with those matters believed to be of particular interest to the Board in connection with the administration of the business affairs of the Association. He mentioned the possibility of



Wm. H. Petrie, Jr., returned war veteran, and Wm. H. Petrie, Sr., Hopkinsville Stone Co., Hopkinsville, Ky.

new permanent headquarters and spoke briefly about the formation of the new Agricultural Limestone Di-

vision. He spoke about the C.P.A. and methods of getting new equipment under the CC rating.

Postwar Construction Outlook

H E. FOREMAN, managing director, Associated General Contractors of America, Washington, D. C., was the final speaker at the opening morning session. In his paper, "Postwar Construction Outlook," he stated that the way the reconversion program is handled during 1946 will have a strong influence on the future economic life of the nation. During the year, the construction industry will face what is probably the greatest demand for its services that it has ever known. He said that if there is a slump in construction due to prolonged strikes, the nation may be plunged into a bitter depression. The work of the construction industry during the war was the foundation of the war effort. If the industry had failed, the entire war effort would have been hampered, perhaps disastrously. However, the construction industry completed its work on or ahead of schedule, and it is reasonable to assume that an industry with such a wartime record will accomplish its peacetime tasks with equal drive.

Mr. Foreman spoke about construction volume, stating that in 1946 it will not be limited by lack of market or demand. The limiting factor will mainly be shortages of materials and labor. Estimates of the amount of construction to be undertaken in 1946 vary, he pointed out. The Department of Commerce estimates a total volume of \$12,500,000,000, of which \$7,500,000,000 will be for new construction and \$5,000,000,000 for maintenance and repair. Highway expenditures for 1946 are estimated at from \$700,000,000 to \$800,000,000. The Federal Works Agency estimated highway activity during the year at \$700,000,000.

Estimates from highway departments indicate that about 15,000 miles of new grading and draining is

planned and pavements, of all kinds, proposed to be laid during the year exceeds 18,000 miles. Airport construction will necessarily be slow in developing, even after Federal aid airport legislation is passed, because surveys and plans must be made, local matching funds arranged for, and other preliminaries completed before construction can start.

Mr. Foreman quoted Major General Fleming, Administrator of the Federal Works Agency, about the uncertainties of costs and other factors which have caused construction bids received by the government to be much higher than estimated. Mr. Foreman said that he agrees in part with General Fleming that the government should defer construction which is not urgently needed when



Wilson P. Foss III, who served during the war as a lieutenant on a sub-chaser, is now vice-president in charge of operations, New York Trap Rock Co.



Delegation from Eastern Rock Products, Inc., Office, N. Y.

it competes with privately financed construction, and when at greater costs than will become normal. He disagreed with claims that contractors have an interest in higher costs than are necessary. Mr. Foreman stated "It has been my experience that contractors are continuously trying to devise means of executing work more efficiently so that it can be done for a lower cost." He said that he feels safe in predicting that so long as there is a trend encouraged by the government for wage increases in all industry, there will be no substantial general reduction in highway construction costs during the year.

Mr. Foreman further said that his Association opposes day labor operations since it has been demonstrated conclusively that regular private construction firms can execute construction more efficiently, more economically, more quickly, and of higher quality than can governmental units trying to do the work with their own forces. He said "the greater is the tendency for day labor in construction operations, the greater is the tendency for governmental units to supply their own aggregates."

In conclusion, Mr. Foreman said that all engaged in the industry must exert their efforts to bring about a constant improvement in the standards of living in the country through private enterprise; that all must work closely with governmental agencies so that laws and policies are adopted which allow the industry to operate most effectively; the industry must strive to hold prices in line; and constantly improve operations so that the public receives continuously greater value for its investment in construction.

Money for Airports

N. E. KELB, president, Cumberland Quarries, Inc., Indianapolis, Ind., presided at an afternoon session covering the subjects of airport design and construction and durability of

concrete. Phillips Moore, Chief, Construction Section, Civil Aeronautics Administration, Washington, D. C., spoke on "The Federal-Aid Program for Airport Construction." He said that we will know more definitely about post-war airport legislation when the two bills S2 and H3615 are reported out of the Conferees Committee. He then mentioned the principal differences between the two bills, of which the most controversial one is with respect to channeling of funds through State Agencies. The Senate version requires that all grants for projects in a State to be made to the State Agency, unless the State does not have an adequate Airport Agency or has not appropriated State Funds for airport projects, in which case, grants may be made directly to the public agencies sponsoring the projects. The Bill as passed by the House, however, does not provide for the channeling of funds through the State Agencies but instead authorizes direct grants to the project sponsors, unless they are prohibited by State Laws from receiving such grants.

The Senate version authorizes the total appropriation of \$375,000,000 for projects in the States, while the House version increases this to \$650,000,000. The Senate Bill authorizes annual appropriations for five years only. The House version for 10 years, but with an acceleration provision permitting appropriations at a rate of not to exceed \$100,000,000 a year.

Mr. Moore mentioned other differences in the two bills, such as: the Senate version authorizes the inclusion of such costs in project costs to be shared by the Government, while the House version expressly forbids any such Federal Aid. The Senate Bill contains provision for reimbursement to airport owners for damage done by the Army and Navy and the House Bill contains no such provision. Mr. Moore told of other variations in the two Bills and said that the Bill as passed by the Senate is nothing more than a Federal Aid Airport Act, while the House Bill is that, plus a series of amendments to the Civil Aeronautics Act.

Mr. Moore said, "In the near future, aviation inevitably must assume a position beside the rail, water, and road systems as an accepted and major form of transportation." He told of the number of civilian aircraft in the nation today, and estimates of the number by 1955. He recommends that approximately 3000 new airports be constructed and that 1600 of the 3000 existing airports be improved. By investing \$25,000,000,000 in roads during the past 25 years, the United States has become a nation on wheels, with 32 million motor vehicles in operation during normal times. For a much smaller investment we can become a nation on wings. Mr. Moore told of the increasing number of potential pilots and prospective airline travellers which necessitate the construction of adequate airport facilities. He said that communities of 25,000 population and less show



O. M. Stall, Liberty Limestone Corporation, left, with his sales manager, John Rice

the greatest lack of airport facilities.

Mr. Moore showed how the crushed stone industry can gain by the enactment of the Federal Aid Airport Program in that for the construction of surface courses, a minimum of 40 percent crushed aggregate is required for bituminous surfaced runways. For runway ends, taxiways, and aprons, 100 percent crushed aggregate is required. For concrete pavements, he said the principal change is that coarse aggregate will be required to be separated into two sizes to avoid segregation. The stone industry will be instrumental in the building of the many airports that are now needed in this country.

Airport Design

R. R. PHILIPPE, Cincinnati Testing Laboratory, War Department, Cincinnati, Ohio, was the next speaker. His talk, entitled "Airport Design as Revealed by Army Load Tests," was illustrated by slides. He said that there has been a six-fold increase in the weight of aircraft since the beginning of the war. The Corps of Engineers has established three laboratories to study the problem of adequate runways and pavements to withstand these increasing weights. One has been established at Vicksburg, to study heavy duty pavements, one at Boston to study frost effects, and one at Cincinnati to study rigid pavements. He said that at the Cincinnati laboratory, the engineers are designing and building pavements for a single wheel load of 150,000 lb. and that soon they will be designing for group wheel loads of 285,000 lb. Within ten years, there will be group wheel load arrangements of 500,000 lb., according to Mr. Philippe. He said that the loads contemplated for design are 10 to 30 times greater than for highways.

Mr. Philippe spoke of the Westergard theory for rigid pavements



Left to right: Stirling Tomkins, president, New York Trap Rock Corporation; U. S. Senator Wayne Luman Morse of Oregon, a featured speaker at the convention; and G. A. Austin, president of Consolidated Quarries Corporation, Decatur, Ga., new president of the N.C.S.A.

which has been adopted at Cincinnati and the slides that were shown illustrated how closely the actual tests were to the theory. For conditions of center loading, theory and actual tests were very close; but for edge loading, actual tests varied somewhat from theory. The theoretical stress showed a higher value than was found in actual tests on edge loading. Slides were shown of the crack patterns produced on several different types of thicknesses of pavement and sub base. It was found that an 8-in. concrete slab on a 6-in. base course showed the greatest amount of failure, while the least amount was found in a 10-in. slab on a 6-in. base course. Similarly, it was found that an 8-in. slab on a 12-in. base course was not as good as a 10-in. slab on a 6-in. base course.

Summarizing, Mr. Philippe said that tentative design curves of the Westergard theory are not conservative for wheel load traffic of 37,000 lb. or greater, but that they are for wheel load traffic of 25,000 lb. or less

He said that the stress at the corners and edges of the slab govern the design of the slab; that steel reinforcement will prolong the life in the event that slabs become overloaded.

Air Entrainment

J. F. BARBEE, engineer of Concrete and Cement Tests, Testing and Research Laboratory, Ohio Department of Highways, Columbus, Ohio, spoke on "The Effect of Air Entrainment on the Durability of Concrete Pavement in Ohio." He told of the test road that was built in 1940, which was constructed of different cements and with and without air entraining agents. Cores were taken from the different sections and subjected to freezing and thawing. Mr. Barbee showed slides that illustrated the scaling and disintegration on the various slabs, some made with air entrained concrete and some with normal portland cement concrete. In all cases, the air entrained concrete showed considerably greater resistance to scaling than did the other slabs, made with normal portland cement concrete.

He said that the use of air-entrained concrete does result in somewhat lower flexural and compressive strength, and for this reason the wisdom of its widespread use has been questioned in some quarters. However, the loss in strength was not great enough to cause failure and the benefit derived from the use of air entraining agents more than compensated for the loss of strength since they materially added to the durability.

Early in 1943, Mr. Barbee stated, the department issued change orders requiring the use of vinsol resin cement on all pavements then under contract which were not at that time virtually completed. All pavement contracts let since have also required the use of air-entrained concrete. Slides were shown where part of the pavement was constructed with nor-



Two returned veterans. On the left is Bruce S. Campbell, Jr., and right, Mr. and Mrs. Richard L. Campbell, of Harry T. Campbell Sons Co., Towson, Md.



Vern Schield, Schield Soft Lime Quarry, Waverly, Iowa

mal portland cement concrete and the other part with air-entrained concrete, and in all cases, the latter showed much greater resistance to scaling and disintegration than did the concrete made without air-entraining agents.

Mr. Barbee stated that better control of the amount of air entrained in the concrete can probably be obtained when admixtures are used, since the quantity of air which will be entrained is dependent upon other factors in addition to the amount of air-entraining agent used. Such other factors include the type and gradation of the aggregates, the richness of the mix, the mixing time, the consistency of the concrete and the type and condition of the mixer.

During 1945, specifications were changed to require air-entraining concrete not only in concrete pavements, but also in concrete bases, structures, and for other incidental items. New specifications now being prepared will require the entrainment of from 3 to 6 percent of air in the concrete. It may be obtained with the use of cement with an interground air-entraining agent or by means of an air-entraining agent added to the concrete at the mixer.

Solving Bituminous Concrete

LLOYD BURGESS, engineer-director, Bituminous Concrete Producers Association, Columbus, Ohio, in a paper, "Some Bituminous Concrete Difficulties and Their Solutions," discussed various bituminous materials in their relation to aggregates and methods of preventing difficulties in bituminous concrete in future construction. Following his presentation, Mr. Goldbeck asked if there was a trend toward the use of softer asphalts. Mr. Burgess said that that was in the right direction and that 85-100 penetration asphalt was prevailing in Ohio. Until recently, he said, 70-80 penetration asphalts were used on high traffic roads and some of that

grade still is in use. For lower traffic roads, 85-100 penetration is used. The desired film for the required service conditions is the criterion.

In reply to Mr. Goldbeck's question relative to the sizes of aggregates

used for different thicknesses of base, he said that Ohio 46, 100 percent minus 1 in. and 95 percent minus 3/4 in., had stood up well in base widening. Larger aggregate will be used in new construction.

Price Control

WILLIAM L. PRINGLE, Head, Masonry Material and Refractories Section, Building Materials and Construction Price Branch, Office of Price Administration, Washington, D. C., gave his paper on "Price Control on Construction Materials," which was the same as that read before the National Sand and Gravel Association and National Ready Mixed Concrete Association conventions, reported in the February 1946 issue of ROCK PRODUCTS.

A lively discussion followed the paper, and Mr. Pringle spent some time in answering questions.

One producer of talc and feldspar asked how much longer the industry can operate under present conditions? He said that he had a \$2,000,000 business and could only show a profit of \$5,000, that equipment is wearing out, etc. Mr. Pringle stated that Congress and the President have stated that prices must be fair and equitable, and that any man will be returned to his position of net worth; that his profit today is based on the amount of business and profit he had prior to March, 1942.

Discussion

G. A. AUSTIN, Decatur, Ga., asked Mr. Pringle why, since he was in the crushed stone business and manufactured concrete products as a sideline, he received less per thousand than a smaller manufacturer that produced only concrete products. Mr. Pringle said that the Atlanta office of the O.P.A. should be contacted, requesting an area order pricing this product and that then all manufacturers would receive the same price.

He was asked for an expression of the O.P.A.'s interpretation of price makes class. Mr. Pringle said that a price given to an individual producer establishes him as a class. He gave an example of a producer who sells a utility company at \$1.00 per ton; sells the railroads at 75c per ton; and sells dealers at \$1.25 per ton. This hypothetical producer has a relative who is a dealer. He sells the relative, for a number of years, at a 10 percent discount, so that he can purchase for \$1.12½. Thus, the O.P.A. says, the price of \$1.12½ shall apply to all dealers. As of March, 1942, his dealer price is frozen at that figure.

Also brought up was the point of a special price made to meet competition prior to 1942, which now no longer exists. Mr. Pringle answered with another illustration. Suppose, he said, that you have a job of large size, and you lowered the price over

prices given to other smaller jobs. You are selling cheaper for only one job, which is an exceptional price for only one instance. After that job is completed, you may go back to the normal price. The prices for a period of years are what governs the O.P.A. price fixed. However, if you sold all railroads, for example, at 75c and one railroad at 66c, you are stuck with 66c.

Mr. Austin asked the question: "Is there any weight given to the fact that crushed stone producers are depleting resources and may have to move to a new location?" The answer was that if a producer has to move to a new source of supply, O.P.A. gives consideration to that fact and will allow a raise of prices to cover the cost of moving.

Another question raised was: "How long does it take to process any increase in price that O.P.A. may grant?" Mr. Pringle said that an individual adjustment would take only a short time, while an area adjustment would take longer.

OTHO M. GRAVES asked if the price makes class interpretation was inherent in the original wording of G.M.P.R. or if it is a new proposition. Mr. Pringle said that the interpretation is inherent in the original language since the first G.M.P.R. orders came out. He quoted from the ruling to illustrate his point. The new ruling is merely a clarification and was inherent in the earlier rulings. He stated that "we will rewrite this definition with respect to any group of producers. We have amended it for the lime and for the brick producers and we will do it for others."



F. L. Mamma, Columbia Quarry Co., St. Louis, Mo., facing camera, and W. N. Carter, National Stone Co., Joliet, Ill.

Labor Relations

JOHN C. GALL, Washington attorney and former counsel for the National Association of Manufacturers, was pessimistic for the immediate future in labor-management relations. In his talk entitled "Labor Disputes and Wage Stabilization," he summed up the accumulation of incidents on the part of government that has led to our predicament. He touched upon organized labor in politics as one of the forerunners to labor-management difficulties and the fact that no provision for wage control had been incorporated into the Price Control Act of 1941.

The National War Labor Board as set up had no limits or standards on issues of wage increases and union security and decisions of management were rejected. The closed shop and disputes followed, wage increases were granted and the spiral was started. Then followed more government intervention in disputes and demands for holidays with pay, vacations, government seizures and intervention, etc., building to the point where labor now wants to assume the functions of management in attempting to secure wages in accord with ability to pay and requiring management to secure permission to arbitrate most any dispute. In commenting on the confused picture, Mr. Gall mentioned a case where a union authorized a strike three weeks after it had occurred. In another case, up for mediation, a non-existent company was involved.

In commenting on the strike situation, he said that there were 4600 work stoppages in 1945, involving 3,000,000 men and 35 million man-days of idleness. Mr. Gall was pessimistic over the outlook because, as he pointed out, even if the current major strikes are settled many of the contracts are subject to early review and many segments of organized labor will not be satisfied with present wage increases. For instance, even if the steel strike is ended, contract negotiations between labor and the management would be re-opened in October.

He prophesied trouble, should John L. Lewis join up with the A.F.L. In his opinion, reconciliation of the two may well bring a program of raiding the ranks of C.I.O. and thereby lead to jurisdictional disputes in which the employers will merely be the injured by-standers.

Mr. Gall predicted price controls would be extended and said that such controls would fail unless accompanied by continuing wage control which, in his opinion, cannot be expected from the administration.

The present breakdown of collective bargaining was attributed to the N.L.R.B. which, by partial directives, "supplemented" genuine collective

bargaining. In many instances, he said, unions made demands of employers while practically at the same time contacting the conciliation serv-

ice of the Department of Labor requesting that their "dispute" be certified to the N.L.R.B. before any real attempt at bargaining had been made.

Blasting Practice—Legal Aspects

H. E. RAINER, general manager, Federal Crushed Stone Corp., Buffalo, N. Y., presided over the Tuesday afternoon session which was devoted to blasting practice, resulting problems in seismology, and legal aspects. Dr. L. Don Leet, Associate Professor of Seismology, Harvard University, opened the session with an interesting talk, "Observations at the Atomic Bomb Test," in which he described some of the seismic effects observed as a result of that blast in New Mexico. Dr. Leet had been stationed at a point 50 miles from the bomb in order to get a record of the earth vibrations from the explosion. In obtaining the result he used seismographs of the type developed for the rock products industry. The vibrations recorded in this New Mexico test gave science the most complete and perfect report of ground vibration on record, and they permitted a study of the anatomy of the wave. The test confirmed the two known types of ground waves and presented two entirely new types. Although Dr. Leet was not allowed to divulge some of the technical information about the waves, the industry can benefit from his observations by applying them to give a better understanding of waves transmitted in quarry blasts.

Dr. Leet also described some of his work leading up to this test, and mentioned further application of the results in forecasting hurricanes and storms through ground waves that such disturbances for some unknown reason set up in advance.

HAROLD WILLIAMS, attorney from Boston, Mass., gave the second speech of the session, "A Factual Approach to Defense of Suits Alleging Damage from Blasting" in which he applied some of the results of wave study described by Dr. Leet to blasting problems in the industry. In such suits alleging damage from quarry blasting there are two issues involved; the legal question as to whether an operator is legally liable for the damage, and the question as to whether any actual harm was accomplished by the blast. Mr. Williams' talk was concerned primarily with this latter factual approach. Beginning with the observation that ordinary quarry blasting does not result in harm to houses or structures, he pointed out that the difficulty lies in making judges and juries familiar with this fact. To a layman the blast might seem alarming. Therefore the defense must depend on convincing the jury that there has been no harm done. Early defense suits depended upon seismograph readings which were

transmitted into the static pressure developed and the amplitude of the waves. From these figures the object was to show that neither of the effects was sufficient to damage a structure. While this argument was technically true, it was often difficult to use as convincing proof.

Mr. Williams suggested that the best proof today is the collection of a large amount of data by observation of conditions before and after blasts and the compilation of the results to show that such blasts actually do not cause damage. When thousands of such records are available a trend can be shown on the basis of actual happenings, not theoretical arguments alone. Claims will be made for many years yet, but it will be best to simplify the facts and depend upon this type of proof until it is generally recognized that such blasting is insufficient to cause damage.

JULES E. JENKINS, Vibration Measurement Engineers, Chicago, Ill., led a discussion on blasting practice that occupied the remainder of the session. Mr. Jenkins began the discussion with the observation that the collection of data described by Mr. Williams should be just as much a necessity for a plant as the actual operating equipment. This problem extends to every quarry. Heretofore the study of seismology has been neglected by the industry on the optimistic viewpoint that if no damage had occurred in the past none was likely to occur in the future. Thus when difficulties do arise the defense is handicapped from lack of information. It is time for the industry to take an aggressive stand, and to get the necessary data about each plant in order to tie it in with other records.

In the discussion that followed, questions were raised as to the effectiveness of delayed-action caps and split-second timing of blasting. No one would say definitely that either had helped substantially to reduce vibration, but several Ohio quarries were reported to have had fewer complaints after the adoption of split-second timing of blasts.

One quarry operator reported that he had received more complaints on a foggy day than on a clear windy one, and Dr. Leet explained this by saying that a large number of complaints come from airborne waves which call attention to the blast. On a clear day the sound is dissipated, but a foggy day reflects the sound. Ground vibration is the same in each instance.

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New Ideas and Experiences Discussed at Operating Session

ONE SESSION, according to annual custom, was set aside for a general discussion of operating problems by operating men and manufacturers of equipment. The meeting, presided over by T. C. COOKE, president, Lynn Sand and Stone Co., Swampscott, Mass., and Nelson Severinghaus, general manager, Consolidated Quarries Corp., Decatur, Ga., had no prepared talks but was planned for informal interchange of ideas and experiences and enjoyed excellent attendance and participation. A number of prepared subjects, submitted in advance to the committee by interested members, was used merely as a guide, to stimulate discussion on subjects known to be of interest to many in attendance.

Drop Ball Breakage

The first subject up for discussion was the use of the drop "ball" for breakage of stone in the quarry, a subject that proved of great interest at the operating session a year ago in New York City. As a result of that earlier discussion, a number of producers had adopted the use of drop balls during 1945. This year an attempt was made to arrive at definite conclusions as to weight, shape, hitch, length of boom, grade of steel and the size and type of cranes in use. Operators with a year or more experience in the use of drop balls were asked to comment.

Mr. Cooke, who has had two years of success with the drop ball, said that he uses a 6000-lb. 40 carbon steel ball of octagonal shape. He uses a $\frac{3}{8}$ -in. cable with a multiple-cable loop and has a 60-ft. crane boom, breaking stone up to 30 tons size or even greater. The stone is a trap, geologically known as a gabbro-diorite.

HAMILTON LOTT, Palmetto Quarries Co., Columbia, S. C., said that for breaking granite a 5000-lb. 20-30 carbon steel ball is dropped from a 40-ft. boom with a $\frac{3}{8}$ -in. cable and a con-

nection consisting of a $\frac{3}{4}$ -in. chain with a double swivel. The ball is a forged billet, cylindrical in shape, and is used for breaking stone in pieces up to 20 tons. The drop ball has not proved economical so far, he said, and its use was adopted due to scarcity of labor.

L. F. MILLER, New York Trap Rock Corp., Newburgh, N. Y., reported experience with a 5000-lb. pear-shaped ball dropped from a 45-ft. boom in breaking dolomite. He is reverting back to a 30-in. diameter cast steel spherical ball used in the past, influenced by the rolling tendencies of the pear-shaped ball. An average of 225 stones are broken in eight hours. Mr. Miller has had good experience with the drop ball and, through its use, has eliminated much delay at the crusher. A 7000-lb. ball has been ordered for use with the 45-ft. boom machine. He recommends that a ball be dropped straight down or thrown out but that side-slapping be avoided in order to prevent breaking the boom.

DALE W. DETWILER, New Enterprise Stone and Lime Co., New Enterprise, Penn., told of six years' experience in operation at three plants. A 4000-lb. manganese steel pear-shaped ball, $\frac{3}{8}$ -in. cable and 35-ft. boom is used. The ball has proven very economical in the breaking of rock up to 15 tons in size.

R. T. LASSITER, Bryan-Monroe Co., Raleigh, N. C., told of the use of a 6000-lb. cylindrical ball, 3½-ft. high and made from a 30-in. Kennedy crusher shaft. A $\frac{3}{4}$ -cu. yd. crane with 40-ft. boom is used in breaking stone up to 15 tons in size. A new ball is on order to be operated from a 60-ft. boom.

BRUCE S. CAMPBELL, H. T. Campbell Sons Co., Towson, Md., using a 7000-lb. flat-bottom billet from a 50-ft. boom, reported having broken three crane booms. He suggested that a 6- or 8-ft. drop of the ball often may



Geo. O. Bassett, Monticello, Ky., father, with son, a returned veteran, at convention

suffice to break rock and that such practice would be less strenuous on the cable. He said that he had purchased an Owens grappling bucket for handling riprap that will be tried in combination with the drop ball for breaking on hill pile-ups.

ABE GOLDBERG, Allis-Chalmers Manufacturing Co., described a drop hammer under development by Allis-Chalmers. It will weigh 4500 lb., and will be hexagonal in shape, measuring 27 in. across the flats. There will be a replaceable manganese wearing shoe provided.

In the discussion that followed, D. C. HICKEY, General Crushed Stone Co., Easton, Penn., said that drop balls were used in the early 1900's before development of pneumatic drilling tools and that they are old tools being revived. He said that a "live" boom is necessary in order to prevent breakage of the crane boom. In commenting on the hazards, Mr. Cooke said that fast flying chips travel upward 200 ft. or more, necessitating the use of screen or steel plate protection, at least $\frac{1}{8}$ in. thick, for the operator in the cab. Mr. Cooke said that one man did the work of nine, including six jack-hammer operators, a blaster, handler and blacksmith.

Quarry Ramps

L. F. MILLER led a discussion on the subject of the most economical grade for a quarry ramp. He had made a study, based upon years of experience, disclosing that a grade between 5½ percent and 8 percent is most economical. His figures show that gasoline consumption is no greater for trucks with 200-hp. engines than for trucks with half the power because of the faster operating time.

Blasting Procedure

Much of the time was taken up with discussion of blasting procedure, led off with an interchange of ideas as to the most economical height of quarry face. M. BOVEE, General Crushed Stone Co., suggested 20 ft. for wagon drills and 40-60 ft. maximum where blast hole drills are used,



Left to right: E. H. Warren, J. T. England, and E. R. Roush, all of Acme Limestone Co., Fort Spring, W. Va.

CRUSHED STONE

stressing the less hazardous conditions when operating low faces. It is his opinion that newly-opened quarries be developed with a face height between 40 and 60 ft. It was mentioned that the Utah Copper Co., near Salt Lake City, a company with tremendous experience in drilling and blasting, has settled on a 50-ft. face as most economical with blast hole drilling.

J. C. LAWRENCE, Liberty Limestone Corp., Buchanan, Va., and D. L. WILLIAMS, Virginian Limestone Corp., Ripplemead, Va., told of their experiences with high faces. Mr. Lawrence had been working a 425-ft. face in benches with jackhammers but now is drilling 294 ft. height of face with a 6½-in. blast hole drill, with a 30-ft. burden. Mr. Williams is working a 250 to 300-ft. face.

MILLO A. NICE, Hercules Powder Co., discussed some of the variables that enter into the problem in selection of height of face. In his comments on high faces he mentioned the expense sometimes incurred by the forced abandonment of holes half way down. Also, he said, the muck bank may be too high for efficient shovel operation. Quarry faces of less than 100 ft. are becoming standard practice in the coal industry and others, he mentioned. Safety is a factor.

When asked to comment on the advantages in larger well drill holes, L. B. BIRCKHEAD, Bucyrus-Erie Co., discussed the relative merits of 6-in. versus 9-in. holes, which had been a live subject over the past ten years. The larger holes have been an advantage from the standpoint of drilling and blasting expense in many quarries, he said. He pointed out that, with the larger holes, 120 percent more powder per foot of hole is placed, which is important particularly at the bottom of a hole. Drilling is just as fast with the larger holes, he said, cutting labor costs, there is less chance of sticking tools and performance is better where

seams are encountered due to the larger periphery of hole. Fewer holes need be drilled to get out a given tonnage. He said that more than 400 9-in. machines are now in service.

Mr. Severinghaus mentioned that, with larger blast holes a heavier burden is used, resulting in piling the broken stone higher, and the burying of some of the big pieces thereby increasing the shovel operating cost. When asked to comment on the effects of bigger blasts, as to the practicability of one hole shots, Mr. Nice reported that favorable results are obtainable but that such shots are a nuisance unless made necessary by neighbors to the quarry.

Electric vs. Diesel Shovels

In a discussion of electric versus Diesel shovels for quarry work, R. E. Sansom, American Limestone Co.,



Wm. E. Hewitt, East St. Louis Stone Co., East St. Louis, Ill.

Knoxville, Tenn., expressed the opinion that there is economy to be gained by the use of electric shovels over clutch types, principally due to overhead costs and higher labor costs with the latter types. This quarry, however, does have the advantage of low T.V.A. electric power rates. Mr. Cooke mentioned that he is using Diesel trucks in hauling from lower levels, because they are good hill climbers.

In a discussion of washing crushed stone over vibrating screens, it was pointed out by one producer that the time element in washing is important, that a saturated condition must be attained for effectiveness. Under the discussion on drilling, it was mentioned that a 4-in. Ingersoll-Rand rotary drill has been tried out in the East and that a 6-in. machine is under test.

The concluding remarks were on the practicability of turning down worn jaw crusher shafts with the ap-



Geo. Hammerschmidt, Elmhurst-Chicago Stone Co., Elmhurst, Ill., left, chatting with M. E. McLean, East St. Louis Stone Co., East St. Louis, Ill.

plication of babbitt to increase the thickness. Apparently, several operators have successfully done this when shafts have been worn as much as 1 in.

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Banquet

FRED O. EARNSHAW, president, presided over the annual banquet concluding the convention, which was preceded by a reception. Daniel Harrington, Chief of the Health and Safety Branch, U. S. Bureau of Mines, presented the National Crushed Stone Safety Awards at the banquet. Marquette Cement Manufacturing Co., Cape Girardeau, Mo., was awarded the bronze plaque provided by the *Explosives Engineer* magazine for the best safety record in 1944. Ten other winners who were presented with certificates were: Martinsburg limestone quarry, Security limestone quarry, and the Catskill limestone quarry of the North American Cement Corp.; White Haven sandstone quarry, Jordanville limestone quarry, and the Winchester trap rock quarry of the General Crushed Stone Co.; Union Furnace limestone quarry of the Warner Co.; No. 4 trap rock quarry of the Southwest Stone Co.; Dunbar limestone mine of the New Castle Lime and Stone Co.; and the Middlefield No. 1 quarry of the New Haven Trap Rock Co. The featured address of the banquet was an interesting and humorous talk by Colonel Harold G. Hoffman, former Governor of the State of New Jersey, in which he described many of his experiences in the army and as Governor of New Jersey, and spoke on "Government in Business and Business in Government."

Luncheon Meetings

At the conclusion of the opening morning session a greeting luncheon was held, presided over by Russell Rarey, vice-president of the Marble Cliff Quarries Co., Columbus, Ohio. After a brief greeting, Mr. Rarey introduced Cecil B. Dickson, Chief of the Washington Bureau of the Gannett Newspapers, who had ust re-

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Col. Harold G. Hoffman, former governor of New Jersey, featured speaker at banquet

Fifty Million Tons Market

First annual convention of Agricultural Limestone Division, N.C.S.A., points to need for better sales promotion and financing arrangement

ABOUT 100 delegates, many of whom stayed over from the National Crushed Stone Association convention, attended the first annual convention of the Agricultural Limestone Division at Cincinnati, Ohio, January 31 and February 1. There were a number of excellent papers by informed representatives of the U. S. Department of Agriculture and by prominent authorities in the field of soil conservation, and informal discussion of sales promotion and merchandising by leaders in the industry. The convention was preceded by a meeting of the Board of Directors and concluded with a business session and meeting of the newly-elected Board of Directors.

New Officers

S. P. MOORE, Concrete Materials and Construction Co., Cedar Rapids, Iowa, was elected chairman of the Agricultural Limestone Division to succeed HOWARD M. THOMAS who has guided the destinies of the Division since its organization early in 1945. Regional vice-chairmen are: Northeast Region, Ellwood Gilbert, New Castle Lime and Stone Co., New Castle, Penn.; East Central Region, O. M. Stull, Liberty Limestone Corp., Buchanan, Va.; Southern Region, W. M. Palmer, Dolomite Products, Inc., Ocala, Fla.; North Central Region, E. J. Krause, Columbia Quarry Co., St. Louis, Mo.; and, Western Region, Howard M. Thomas, Fort Scott Hy-

draulic Cement Co., Fort Scott, Kans.

Directors are elected on a regional basis. The Board comprises the following:

NORTH EAST REGION: Paul Detwiler, New Enterprise Stone and Lime Co., New Enterprise, Penn.; Harry Battin, Callanan Road Improvement Co., South Bethlehem, N. Y.; and H. E. Rainer, Federal Crushed Stone Corp., Buffalo, N. Y.

EAST CENTRAL REGION: A. W. McThenia, Acme Limestone Co., Fort Spring, W. Va.; Earl L. Dingle, Harry T. Campbell Sons' Corp., Towson, Md.; Sam Downing, Central Rock Co., Lexington, Ky.; R. P. Immel, American Limestone Co., Knoxville, Tenn.; A. B. Rodes, Franklin Limestone Co., Nashville, Tenn.; and W. T. Ragland, Superior Stone Co., Raleigh, N. C.

NORTH CENTRAL REGION: Norbert Neuheisel, Neuheisel Lime Works, Eau Claire, Wis.; Ed. J. Leary, Ed. J. Leary Construction Co., River Falls, Wis.; E. E. Haapala, Zumbrota, Minn.; Paul M. Nauman, Dubuque Stone Products Co., Dubuque, Iowa; Wm. D. Dillon, Dillon, Sharpe and Co., Centerville, Iowa; L. W. Hayes, Kansas City, Mo.; P. E. Heim, Carbon Limestone Co., Youngstown, Ohio; James Eells, Basic Dolomite, Inc., Cleveland, Ohio; A. K. Hausmann, Kelley Island Lime and Transport Co., Cleveland, Ohio; R. M. Siegfried, National Lime and Stone Co., Findlay, Ohio; Wm. E. Hewitt, East St.



Henry A. Hushke, managing director, Agricultural Limestone Division, N.C.S.A.

Louis, Ill.; A. E. Hanshaw, Lehigh Stone Co., Kankakee, Ill.; S. J. Marks, Material Service Corp., Chicago, Ill.; Harry Clark, Consumers' Co., Chicago, Ill.; and F. L. Mumma, Columbia Quarry Co., Decatur, Ill.

SOUTHERN REGION: R. T. Willingham, Willingham-Little Stone Co., Atlanta, Ga.; C. M. Sims, Campbell Limestone Co., Gaffney, S. C.; and E. V. Scott, Southwest Stone Co., Dallas, Tex.

WESTERN REGION: John J. Stark, Girard, Kans.

OTHO M. GRAVES was reelected the official representative of the National Crushed Stone Association to serve on the Board of Directors of the Agricultural Limestone Division. Messrs. Eells, Haapala and Moore were elected ex-officio members to serve on the board of directors of the National Crushed Stone Association.

Retiring chairman Howard M. Thomas called the convention to order in the first session and briefly reviewed some of the accomplishments of the Division in its short period of existence. He expressed pride in the accomplishments of the



Luncheon at the opening meeting of the Agricultural Limestone Division, National Crushed Stone Association

industry during the war years and emphasized that the agricultural limestone business is vital to the health and happiness of America. He stressed the need for increasing the membership in the Division and for carrying on a continuous educational program. Henry Huschke, managing director, and J. R. Boyd, secretary, were complimented for the fine job they have done.

Managing Director's Report

HENRY HUSCHKE's report was much the same as his earlier one to the board of directors, in which he summarized the activities of the Division since its organization early in 1945. The first major activity undertaken was directed toward securing adequate bank loans for farmers to purchase agricultural limestone and, Mr. Huschke reported that he has contacted all but one of the 12 Federal Reserve Banks. Federal Reserve Banks in Cleveland and St. Louis are taking action and, he said, others have expressed an interest in making loans for soil improvement.

Financing—Promotion

He mentioned that the Federal Reserve Bank of Boston has requested the Division to prepare a series of advertisements on soil liming, with the idea of the Federal Reserve Bank suggesting that banks in New England run those advertisements in local newspapers. The newly-elected Board of Directors took favorable action on this matter later and the necessary funds were voluntarily subscribed.

Mr. Huschke said that the editors of the *Farm Journal* had become interested in the bank loan movement to the point that a feature story was to be published in the February issue of the publication, which has a circulation of 2½ million readers. The story was to be based on the Cleveland plan.

Since July 1, 1945, Mr. Huschke has attended and addressed seven meet-

ings of state groups of agricultural limestone producers and reported that those meetings proved successful in securing new members. During 1945 the Division had mailed a number of letters to member companies covering such subjects as State lime laws, information on the A.A.A., consumption of liming materials, priorities, price controls, labor legislation, promotion and others of current interest.

A start has been made on the extremely-important program of promotion. An invisible ink postcard and a folder entitled "Repair and Rebuild with Limestone and Legumes" have been issued and some 110,500 and 93,800 copies of the two pieces, respectively, had been ordered by member companies. He pointed out that there are six million farms in the United States, most of which are located in lime-deficient areas. The Division is getting active in the field of agronomy and has started an agronomy library. In concluding, Mr. Huschke said that a minimum of 51,000,000 tons of liming materials is required annually and that, if tonnage falls off with curtailment of A.A.A. funds lack of knowledge on the part of farmers is to blame. For each dollar spent for liming materials, the farmer stands to receive a return of two to ten dollars.

Secretary's Report

SECRETARY J. R. BOYD, in his report, mentioned that the Division now has 140 members and 24 associate members. He stressed the need for obtaining new members as the solution to meeting a new budget (later approved) that represented the minimum required for effective operation of the Division. An extensive membership campaign will be undertaken in 1946.

Mr. Boyd commented briefly on the subject of conventions before the new Board of Directors. He said that no definite decision had been made by the National Crushed Stone Association yet in regard to the 1947 annual convention because it had not yet been determined whether machinery exhibits will be held. He said that the parent organization was in favor of an exposition but that, so far, manufacturers of machinery had not favored holding an exhibit until 1948. It was decided that the midyear meeting and annual convention be held in conjunction with the National Crushed Stone Association. The mid-year meeting likely will be held at Hot Springs, Va.

Warns of Soil Depletion

TOM KELLY, Soil Conservation Service, Milwaukee, Wis., a soil conservation missionary, newspaper writer and cartoonist, who is in demand everywhere as a luncheon and banquet speaker, gave an inspirational



Tom Kelly, Soil Conservation Service, Milwaukee, Wis., speaker at Agricultural Limestone Division luncheon

message, interjected with spicey bits of humor and illustrated by chalk drawings, on the subject of soil conservation before the greeting luncheon of the Agricultural Limestone Division, P. E. Heim, presiding.

He spoke of the conservation of the wealth of our natural resources, of which the soil is one of the most important. He stated that we became the greatest nation in the world due to our natural resources, but to remain the greatest nation depends on the restoration of the depleted soil and proper management of the conservation program. Mr. Kelly said that our forests are being depleted faster than they are being grown; that we are taking minerals out of our soils 60 percent faster than we are replacing them; that we have overcropped our lands and have permitted rich top soils to wash away. If we continue as we have in the past, without making some attempt to restore the fertility of the soil, famine will starve the land within the next 100 years, he warned.

Mr. Kelly said that it has cost the farmers 400 million dollars in top soils that have washed away; that the upper third of the soil has been washed away while the lower two-thirds has been deteriorated. Speaking on contour plowing, Mr. Kelly said that the old-fashioned straight line plowing causes the formation of furrows, or small drainage ditches, which allow the water to carry off the top soil by permitting the water to gain momentum as it washes across the land. This also results in floods, which carry top soil and deposit it in the river beds. As a concrete example of how soils are deposited in the river bottoms, thus raising the level of the river and causing floods, Mr. Kelly stated that the Yellow river in China has risen 100 ft. above the



Secretary J. R. Boyd addresses Agricultural Limestone Division. On the left is Howard M. Thomas, the division's first chairman

surrounding land in the last 2000 years.

To prevent this washing away of the top soil, farm lands should be plowed so that dams are formed instead of ditches. Plowing should be at right angles to the flow of water, and every farm should be plowed according to its particular contour features. Another method of breaking the flow of water is to strip plant rows of clover or alfalfa down the

hillside. Gullies can be prevented from forming by sodding and many other methods. Mr. Kelly said that there are 59 different methods of preventing soil erosion. He said that we must cooperate with Nature instead of trying to dominate her; that proper rotation of crops, proper fertilizing, are necessary to prevent the loss of our lands. He urged producers to sell conservation to the farmer along with their limestone.

Purchase Order Plan

GUY SMITH, Production and Marketing Administration, U. S. Department of Agriculture, presented an extremely informative paper before the Agricultural Limestone Division, clearly setting forth the government's position on soil conservation practices and explaining the comparatively new purchase order plan for agricultural limestone which is gaining in acceptance.

He expressed the hope that the Agricultural Limestone Division and his organization will work together closely in the solution of mutual problems. The conservation payments for the application of agricultural limestone varies between States, he said, and now averages between 70 and 80 percent of the cost of the agstone delivered to the farm.

Mr. Smith described in some detail the purpose and advantages of the purchase order plan which, in addition to government contracts, is offered to farmers unable to purchase their entire requirements directly from the limestone vendor. Under the purchase order plan, the farmer makes his own arrangements with the vendor for delivery, a fair price being determined for each transaction. After a price is approved, the farmer is issued a purchase order by the county committee which he surrenders to the vendor at the time of delivery. The farmer pays the vendor in cash the difference between the fair price and the applicable credit rate, while the vendor looks to the government for payment of the balance due on a purchase order. The plan enables conducting the business with as little interference from the government as possible, he said.

Mr. Smith said that until the day arrives when the farmer and vendor can do business without the assistance of government purchases, the government stands ready to assist in assuring the maximum production of agstone. When warranted, the Purchase Order Plan will be extended.

Mr. Smith stated that the agricultural limestone industry is challenged by this and all future generations for a sound program for supplying the nation with a basic ingredient to maintain the fertility of the soil.

He discussed the inroads being

made by gully erosion and sheet erosion, stating that 50 million acres have been destroyed and that 50 million acres in addition are badly eroded. So, he urged that every effort be made to have foremen, laborers, truckers and others be apprised of the reasons for applying agricultural limestone.

New Approach to Problem

He described the new approach being taken to the agricultural conservation program in most states as contrasted to the practice, in the past, when funds appropriated were broken down to individual farms by use of a so-called farm allowance. The overall picture of soil conservation is now the consideration. Conservation needs of each farm will be considered on the basis of current needs for soil conservation on that particular farm. Practices most critically needed in a given county will be only those approved for payment in the county during 1946. A farmer whose allowance would permit the approval of only five tons might now be able to receive 25 or 50 tons or, on the other hand, if other practices are needed more it might be that no lime would be approved for payment on a farm. The effect, he said, will be that there



Howard Doerr, Production and Marketing Administration, Department of Agriculture, Washington, D. C., leading discussion at meeting of Agricultural Limestone division meeting



Guy Smith, Production and Marketing Administration, Department of Agriculture, Washington, D. C., one of the speakers

will be a market for all the liming material that can be produced.

Mr. Smith urged that producers visit the county offices to work out plans for the delivery of agstone and to let the county officials know how much tonnage will be available. He further urged that agstone be delivered first to farmers who have prior approval, so that it may be applied where it will do the most good.

Mr. Smith showed an interesting chart, tracing the growth of the application of agstone with relation to farm income since 1929. While the growth of the industry has been amazing during the past ten years, he said that the industry still will have better than two customers for each ton of material. About 1½ million tons were distributed in 1933 as compared to 23 million tons in 1944 which, he said, is not more than a maintenance job. About 51 million tons annually are required.

He emphasized that in the years to come the cost of liming materials and the farmer's income must bear an economically sound relationship, since each year the cash purchases are increasing, in urging that prices be held within reason. In conclusion, he said that one of the first big steps in the agricultural postwar era is to convert millions of acres of cropland to grassland, requiring tremendous tonnages of agstone.

Discussion

Following Mr. Smith's talk, Howard Doerr, Production and Marketing Administration, led an informal discussion covering, principally, interpretation of the purchase order plan. Five sectional representatives of P.M. A. were introduced and participated in the discussion. The plan is in effect throughout Ohio, throughout the southern region and is coming into

(Report of the Agricultural Limestone Division continued on page 102)

Calculating Cement Raw Mix Blending Graphically

By C. J. KNICKERBOCKER

CEMENT raw mix calculations based upon a single constituent of the materials are readily made arithmetically but may be somewhat simplified through the use of graphical solutions.

Two graphical methods are shown, one for blending to a constant volume (or weight) and the other for general solution purposes. It is necessary to compensate for moisture and ignition loss differences outside the graphs.

The equations used for solution and graph construction are:

(1) Fractional part low CaO material in blend:

$$\frac{(\text{CaO of high CaO material}) - (\text{Blend CaO desired})}{(\text{CaO of high CaO material}) - (\text{CaO of low CaO material})}$$

(2) Fractional part high CaO material in blend:

$$\frac{(\text{Blend CaO desired}) - (\text{CaO of low CaO material})}{(\text{CaO of high CaO material}) - (\text{CaO of low CaO material})}$$

Values other than CaO may be substituted in the above.

The equations are simplified for use as follows:

$$(1) \frac{(H - D)}{(H - L)}, (2) \frac{(D - L)}{(H - L)}$$

where

H = CaO of high CaO material

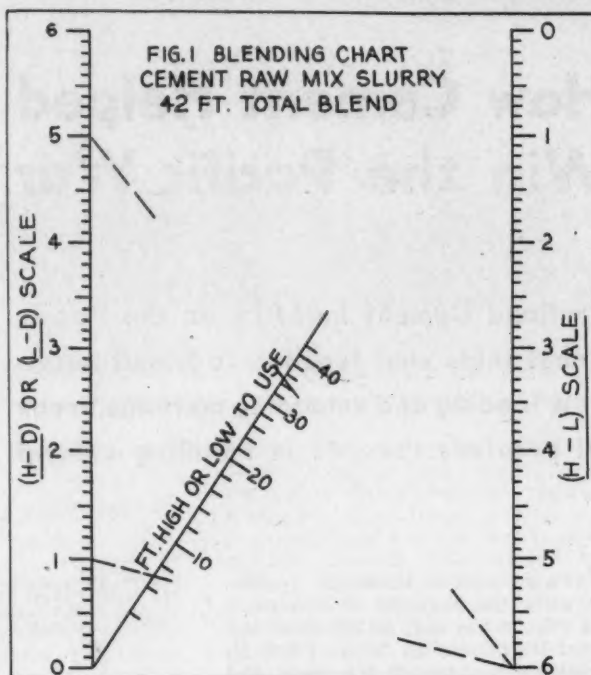
D = CaO of blend

L = CaO of low CaO material

The amount of material required to result in a blend of definite quantity is found by multiplying the ratios determined by Eq. (1) and (2) by the number of units desired in the blend.

Fig. 1 illustrates the convenience afforded by a graph constructed for a particular problem. Two raw slurries of known CaO content and a final blend that is constant at 42 ft. are used.

Fig. 1: Chart for calculating raw mix blending



Problem:

H = 71% ignited CaO

D = 66% ignited CaO

L = 65% ignited CaO

42-ft. blend

Solution:

$$(1) \frac{(71 - 66)}{(71 - 65)} \times 42 = \frac{5 \times 42}{6} = 35 \text{ ft. low}$$

$$(2) \frac{(66 - 65)}{(71 - 65)} \times 42 = \frac{1 \times 42}{6} = 7 \text{ ft. high}$$

Using graph, Fig. 1:

(1) Align 5 at left (H - D) with 6 at right (H - L).

(2) Align 1 at left (D - L) with 6 at right (H - L).

Values may be read to the even foot on the graph.

This sliding scale graph, Fig. 2, is used to solve two material problems,

and has a range of 50 blend units. Materials differing by not more than 7% (70 units), CaO, etc., may be used.

The lower stationary scale (A) represents the values (H - D) or (L - D).

The lower slide scale (B) represents the value (H - L).

The upper slide scale (T) represents the values corresponding to the blend units desired.

The upper stationary scale represents the solution value in terms of high or low units in the blend.

Problem:

H = 46.3% raw CaO

D = 43.0% raw CaO

L = 41.9% raw CaO

35 unit blend

Solution:

$$(1) \frac{46.3 - 43.0}{46.3 - 41.9} \times 35 = \frac{3.3 \times 35}{4.4} = 26.25 \text{ units low}$$

(Continued on page 107)

FIG. 2 SLURRY BLENDING SLIDE RULE

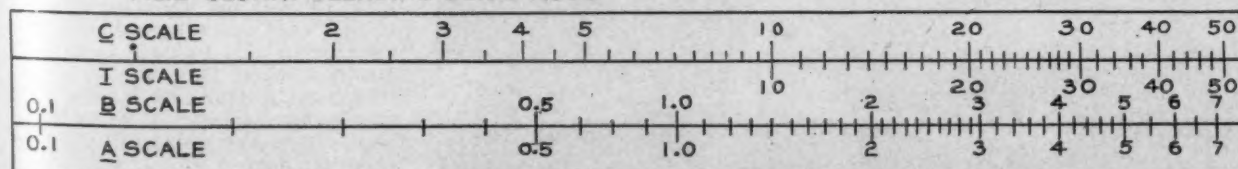


Fig. 2: Slurry blending slide rule for general solution purposes

Shipping

How Cement Helped Win the Pacific War

Portland Cement Industry on the Pacific Coast ships vast tonnage to island bases. New loading and unloading methods break all previous records in handling cement

LET'S GO BACK to December 7, 1941, when the stockpile of cement in the Pacific was only 65,000 bbls, and Pearl Harbor lay in ruins. From an industrial standpoint, the blood and strife on that dismal day was matched by the acute shortage of material, a shortage which truly tested the mettle of Western cement producers.

The battle has since been won but the story of how Pacific Coast cement plants met the challenge has never been told. It is a story of record breaking production accomplishments, "impossible" deliveries to meet convoy schedules, and the common American will to win the victory—from quarry cat skinner to pack house lumper.

Cement being pumped into vessel through 10-in. pipe lines. Vessels hold average of 40,000 bbls.

With the outbreak of war in the Pacific, the immediate sources of cement supply were limited to New Zealand, Australia and the Mainland. Two small plants in the Philippines were quickly cut off by the Japanese, and with the South Pacific in control of the enemy at the time, even shipping from New Zealand and Australia was extremely hazardous. The burden then fell to the Mainland, and the West was prepared to carry

it, thanks to a combination of foresight and more than a few production miracles.

Pearl Harbor found only two bulk carriers available to fill the demand in the Hawaiian Islands, the Santa Cruz Portland Cement Co., and the Waima, a converted Matson vessel. Army and Navy orders immediately following the attack called for delivery of approximately 200,000 bbls. of cement a month, whereas shipments to the islands prior to the war averaged 60,000.

A check of available cement found 60,000 bbls. in the Permanente Cement Co., silos at Honolulu and 5,000 bbls. of sacked cement in the hands of dealers, so we had to start building a Pacific fortress with a total of 65,000 bbls. of cement, a mere drop in the bucket when compared with the millions required. By January 27, 1942, there was not very much cement in the Hawaiian Islands. Permanente was sweeping the docks and probing the corners of its silos for bucketfuls. Priorities were so tough that the Aiea Navy Hospital, then under construction, was allotted 87 sacks for its three-week quota!

Fortunately, Permanente Steamship Company had acquired two ships and were making plans to refit them for bulk use when Pacific hostilities broke out. These vessels, the Permanente and Philippa, went into action in May, 1942, and gave the United States four bulk carriers with an average capacity of 40,000 bbls. each. One-way passage required about ten days.

Meanwhile, the Permanente Ce-



Sacked cement being loaded into hold of freighter for delivery overseas

ment Co., had been awarded the contract for Contractors, Pacific Naval Air Bases, representing the Navy Bureau of Yards and Docks. Hawaiian Dredging Co., Raymond Concrete Pile Co., Turner Construction Co., Morrison-Knudsen Co., Inc., J. H. Pomeroy & Co., Inc., W. A. Bechtel Co., Utah Construction Co., and the Byrne Organization composed the CPNAB group.

This contract was held until January, 1945, involving the delivery of all of the bulk cement for Navy installations in the Pacific up until June 30, 1945. Bulk and sack shipments by Permanente Cement Co., to CPNAB totaled nearly 6,000,000 bbls. an achievement which won CPNAB commendation and recommendation by the Fourteenth Naval District that the cement company be awarded the Army-Navy Production Award.

Expand Plant Capacity

Permanent's plant facilities, expanding to meet the growing demand, reached a peak in July, 1941, when a fourth kiln was added, making the California company's plant the largest in the world with an annual capacity of 5,000,000 bbls. Other contracts, dated from 1940 to October, 1945, increased the company's overseas shipments to more than 7,000,000 bbls. These included Pacific Bridge Co., Ready-Mix Concrete Co.,



Bulk carrier loading at Redwood City, Calif., dock. Silos have total capacity of 70,000 bbls.

U. S. Engineers and other Navy bases in the South Pacific.

Bulk Loading Facilities

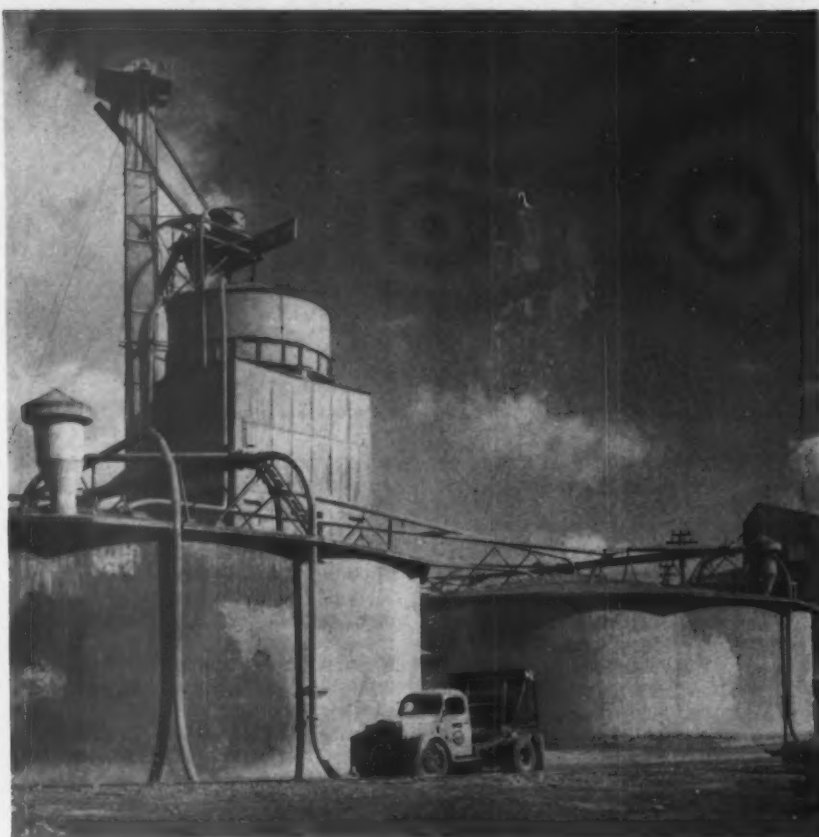
Behind these figures is an amazing production record. In spite of major transportation problems, Permanente Cement Co., never missed a convoy, and during 1942-43 its Honolulu facilities delivered an average of 5,000 bbls. daily. Loading facilities were set up at Redwood City, located on San Francisco Bay, to supply the Honolulu branch. Bulk trucks carried cement from the parent plant to the 60,000-bbl. shoreside silos, a distance of approximately 20 miles,

where it is pumped through 10-in. pipelines into the bulk carriers. Loading a ship with 40,000 bbls. required approximately 24 hours. Average discharging time was 108 hours, using portable Type D Fuller-Kinyon unloaders. By installing the most efficient loading and unloading equipment, including two 10-in. Fuller-Kinyon pumps with a capacity of 1,000 bbls. per hour each, tie-up time at the dock was reduced, the boats joined convoys without delay, and cement was delivered to its destination faster.

The skipper of the Santacruzement attested to this fact in January, 1944,



Aerial view of Permanente Cement Company plant which has annual capacity of 5,000,000 bbls.



Partial view of Honolulu cement storage facilities. Note camouflage on two of four silos. Plant employees watched Pearl Harbor attack from tower

when he declared that the barnacles on his ship hadn't seen daylight for more than two years. All four available bulk carriers were in service steadily from May, 1942, to October, 1943, when the War Shipping Administration refitted the *Permanente* and *Philippa* as cargo vessels. The *Santa Cruz* and *Waimea* continued regular runs until April, 1945.

Record Sack Shipments

In addition to the bulk shipments, an endless stream of sacks poured into the San Francisco docks to fill the urgent demand. *Permanente* set a record late in January, 1945, by delivering 532,000 sacks in 15 days on a 50-mile haul to the waterfront. A month before the end of the war sack shipments of the company reached as high as 62,859 daily.

Although silos in Honolulu had a capacity of 81,600 bbls. there was a demand for additional storage facilities to provide for the heavy shipments early in the war. *Pacific Bridge Co.*, engaged in building drydocks at Pearl Harbor, erected two bulk sheds with a capacity of 60,000 bbls. each and pumped direct to the batching plant at the site of construction. A desacking device that cut open 22,000 to 25,000 sacks every 24 hours also was devised by *Pacific Bridge Co.* This piece of Yankee ingenuity, which shredded the sacks and blew

the pieces to an incinerator, was rivaled by one conceived by Claude Harper, Honolulu division manager of *Permanente Cement Co.*

Mr. Harper placed electric circular saws at the head of chutes leading to a hopper. Veins built in the chutes pried open the bags after they were ripped open. Belt conveyors carried the sacks from the yard to the desacker, and the invention worked so well that the pile of empty bags created a minor military objective when they reached two stories high and half a block long. At the request of the Army and Navy, the cement company desacked over 1,000,000 sacks of cement by this method. It was

much more effective than the bolo knives originally used by the Filipino natives.

Similar situations, coming at a time when we were on the defensive, produced other production "miracles." For instance, when the Marines took Tarawa, *Permanente's* Honolulu plant sacked cement at the rate of 13,000 bags per day with one three-spout machine to provide the Leathernecks with material to rebuild fortifications. Again, when the Army couldn't wait for a concrete installation on the Island of Kauai, 286,000 sacks of cement were quickly dispatched to stabilize the soil so B-29s could land at the base.

New Batching Plant Records

Some of the batching plants, too, accomplished amazing records. As an example, *Ready-Mix Concrete Company* estimated in January, 1945, that its Oahu plants in Hawaii had produced nearly a million cubic yards of concrete or enough to make a column 30 ft. square by 5½ miles high.

In addition to the great quantities of cement required in the Hawaiian Islands for such projects as the Red Hill underground fuel tanks and the Pearl Harbor drydocks, both of which were supplied by *Permanente*, the Honolulu plant serviced almost any Pacific outpost you can name. Johnston Island, Palmyra, Midway, Wake, Christmas, Tarawa, Guadalcanal, Ellice, Eniwetok and Kwajalein were among them.

This terrific demand resulted in a world's production record in 1942, when *Permanente Cement Co.* turned out 5,066,060 bbls. of cement. Bear in mind that in addition to its export commitments, *Permanente* had large government orders to fill for installations within the continental United States plus the Shasta Dam contract, which ultimately required 6,800,000 bbls. alone.

Such mighty achievements are a tribute to the Portland cement industry's part in winning the Pacific, where concrete sentinels still stand to preserve the peace.



Diesel-powered tractor-trailer pulling up to San Francisco warehouse with a load of sacked cement

OPERATING TRENDS



Typical of the limestone mining operations in Kentucky are the drilling operations of the Louisville Crushed Stone Co.

Kentucky— Mines Limestone—Dredges Sand and Gravel

THE GEOLOGY of Kentucky, insofar as it is of interest to the producer of rock products, has two important features. No part of the state was glaciated, but some of its river valleys and flood plains profited by deposits of glacial drift of both the Illinois (early) and Wisconsin (later) glaciers. This glacial drift, especially in the present and ancient Ohio River valley, is the source of the State's best commercial sand and gravel deposits. The other important feature is that all of the commercial stone deposits are sedimentary rocks, generally limestones, the best of which are the oldest—Ordovician to Devonian periods. Still older rocks of the pre-Cambrian period underlie these surface rocks by 3000 ft. or more, and outcrop in only two small areas as intrusive dikes, one of which is important for the fluorspar with which it is associated.

The ancient topography of the State was apparently a series of plateaus and its present rolling and hilly topography is the result of uneven erosion of the original plateaus, or peneplains (nearly plains). This erosion and the resultant soil deposits gave the State rich agricultural

By **NATHAN C. ROCKWOOD**
and **H. E. SWANSON**

land, which when first seen by white men was in part heavily forested and in general abundant in game—the dark and bloody hunting ground of the Indians and Daniel Boone. The erosion of the original high plateaus also left numerous local small deposits of sand and gravel and exposures of good limestones.

The State lies in the region of the Appalachian Plateau and Interior Lower Plateaus, with the southeastern corner touching the belt of Appalachian folding and thrust faulting. The so-called Jackson Purchase, at the southwestern corner of the State, is a portion of the Gulf Embayment or Coastal Plain. Outcropping Paleozoics range from Mid-Ordovician (old) to Pennsylvanian (more recent), while the Cretaceous and Tertiary are developed in the Jackson Purchase and vicinity. Pleistocene alluvium (glacial origin) occurs abundantly in the valleys of western Kentucky and in the Ohio River and its tributaries, while drift of this same glacial age is found in the Ohio

River counties from Oldham to Bracken, and occasional older erratics are found farther south. The bed rocks are gently warped and show marked disturbance only in the vicinity of pronounced faulting.

Limestone

Limestone suitable for construction aggregate occurs in two principal regions in the State, the Blue Grass and the Mississippian Plateaus. It occurs in very limited quantities in the Western and Eastern coal fields, and not at all in the Jackson Purchase, which, it will be remembered is part of the Coastal Plain that includes the States to the South.

The Blue Grass region is the central lowland, the region of Ordovician exposure or outcrop, although some areas of Silurian and Mid-Devonian limestone are included. Typically a limestone country, the surface is gently rolling, except in the vicinity of large streams, where the topography is mature and distinctly rough.

Ordovician rocks' outcropping in the Blue Grass region are the Oregon and Tyrone limestones and Lexington limestone of the Trenton forma-



Close-up of one of the big dredges operated by the Ohio River Sand Co.

tion, which are excellent for construction aggregates. The Oregon limestone outcrops in the Kentucky River region of the Inner Blue Grass and is a fine-grained, gray to cream colored dolomitic stone of the Lowville age. The Tyrone limestone, also found in the Kentucky River region of the Blue Grass, is a dense gray limestone, 90-ft. thick, with facets of coarsely crystalline calcite scattered through it. Outcropping over a wide area in the central Blue Grass are the Lexington and Perryville limestones, both relatively low in magnesia as compared to the Oregon and Camp Nelson limestones, associated with the Tyrone, which are high in magnesia. The Lexington includes all beds between the Tyrone and Cynthia limestone members.

The Silver Creek limestone, known as hydraulic limestone or the cement bed, has been utilized for the manufacture of natural cement in southern Indiana and to a small extent in Louisville. It has a thickness of about 10-ft. and outcrops in a narrow belt along the Ohio River near Louisville. Limestone of the Fredonia member of the Ste. Genevieve is used at Kosmosdale by the Kosmos Portland Cement Co. This member is mainly a thick-bedded, coarsely oolitic, light gray limestone, with some beds containing chert.

Louisville limestone, developed in Jefferson and Oldham counties, consists of 40- to 100-ft. of massive fine-grained, low magnesium limestone, underlying the massive Jeffersonville member. The Louisville is of Silurian

age while the Jeffersonville, a gray, coarsely crystalline dolomitic stone, is of Devonian age (next later period).

The Mississippian Plateaus area is the region of Mississippian outcrop, particularly the middle and upper parts of the system. It forms a broad belt to the west and south of the Blue Grass. The Mississippian Plateaus stand as a pair of inward-facing cuestas (ridges) rising above the Blue Grass. The lower of the two is the surface of a cuesta developed on the outward-dipping St. Louis limestone while the higher borders the Ste. Genevieve and Lower Chester hills.

Sand and Gravel

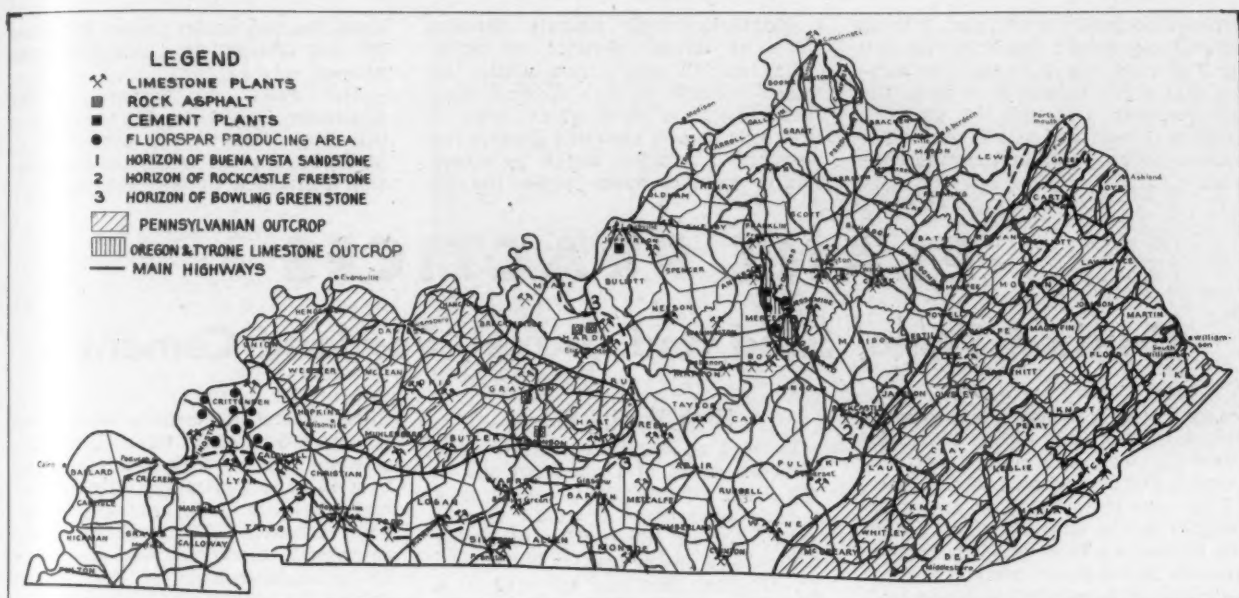
Sand and gravel is abundantly available in streams, particularly those draining the regions of sandstone outcrop (Chester and Pennsylvanian sandstones). Gravel is available along streams draining the area of lower Pottsville conglomerates (Rockcastle and Corbin of eastern Kentucky and Caseyville of western Kentucky). Another common source of gravel is the chert of the St. Louis and to a lesser extent the Ste. Genevieve, Fort Payne, and other chert-bearing limestone formations. A third source is the glacial outwash. This is found along streams which have drained southward and westward from the icesheets of the Pleistocene.

Gravels of the Ohio, Cumberland, and Tennessee rivers and their tributaries are used, although those of the Ohio River are best. These include glacial material, chert from the



Kentucky Rock Asphalt Co. unique stockpiling set-up. Note continuous overhead bucket conveyor cables and towers

OPERATING TRENDS



Map of Kentucky showing crushed stone plants, cement plants, fluorspar areas, and rock asphalt deposits. Highways shown in color

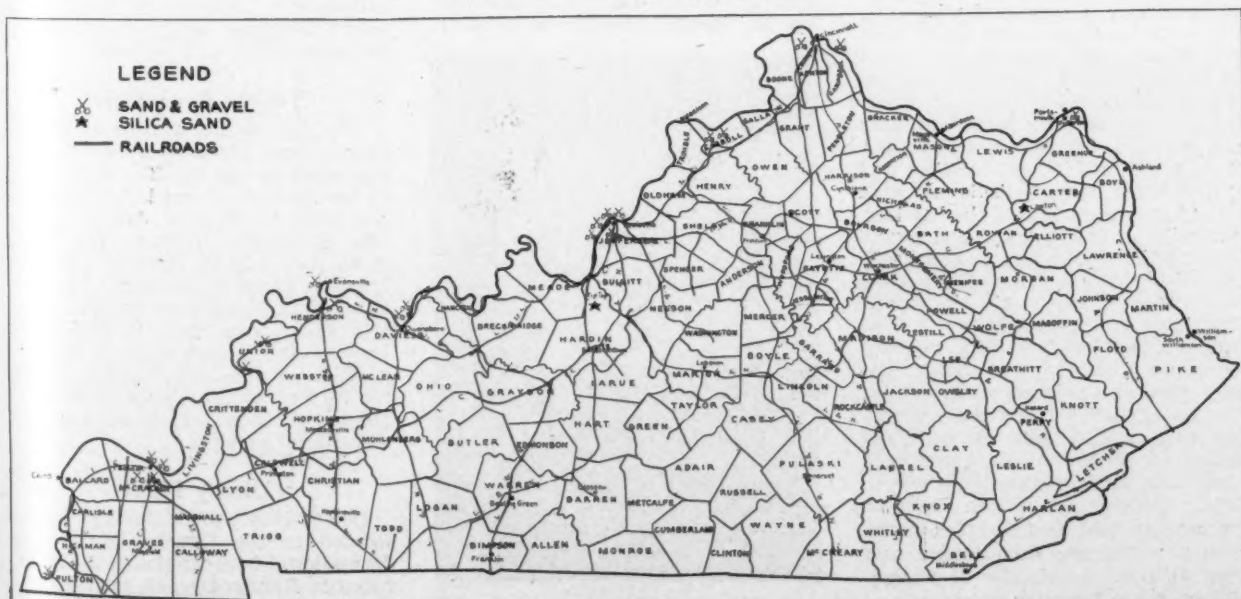
St. Louis limestone, and quartz pebbles from the lower Pottsville. The Kentucky Department of Highways specifies that only gravels obtained from the Ohio River may be used as concrete aggregates. Considerable trouble has been encountered with concrete made from the cherty gravels of the Tennessee River. These gravels include not only the chert from the St. Louis and Fort Payne formations, which also occur in the Cumberland River gravels, but also chert from several Devonian formations of western Tennessee.

Rock asphalt deposits in Kentucky occur in Edmonson, Graysom, Hardin,

Breckinridge, Logan, and Warran counties of the western part of the State. The deposits of Edmonson County are mainly in the basal member of the Caseyville and the higher Bee Spring sandstone where this member forms the base of the Pottsville. The Cypress and Hardinsburg sandstones are locally impregnated but because of heavy overburden and location have not been commercialized extensively. The deposits of Grayson, Breckinridge, and Logan counties are in the Cypress and those of Warren County in the Bee Spring formations.

Rock Asphalt

Rock asphalt is a natural road-making material which has been formed by the impregnation of rock formations with liquid asphalt, a residual deposit resulting from slow distillation of petroleum in the ground. The bitumen which permeates the stone not only fills the cracks and seams but also fills the voids between the component grains of the stone. Bitumen content in the raw material varies from a trace up to complete saturation. Commercial rock is essentially saturated, but because of differences in the original porosity the



Map of Kentucky showing locations of sand and gravel plants, principally along the Ohio river, and silica sand deposits. Principal railroads shown in color

asphalt content varies from 3 to 15 percent. Standard specifications call for 7 percent, which necessitates mixing lean with rich rock to meet the requirements, although the artificial mixture is regarded as inferior to the natural rock of similar bitumen content.

Kentucky rock asphalt deposits may be termed defunct oil pools. They are oil sands from which the more volatile hydro-carbons have been lost as a result of exposure of the beds at and near the surface, by erosion. Alteration began by circulating ground water while the oil

sand was still under cover. Exposure to the atmosphere completed the process.

The writer is indebted to the Kentucky Geological Survey and to "Geology of Kentucky" by Arthur C. McFarlan for the geological information contained in this article.

PLANT PRACTICES

Crushed Stone, Sand and Gravel, Portland Cement

ONE of the foremost stone producers in Kentucky is the Kentucky Stone Co., with nine plants scattered through the central part of the State. Of the nine operations, six are mines and three are quarries. The plants are located at High Bridge, Tyrone, Russellville, Mullins, Mount Vernon, Irvington, Lilimay, Yellow Rock, and Upton. All are strategically located on railway lines radiating out of Louisville, which is significant since most of the plants were originally constructed to produce ballast. In recent years, however, all types of construction aggregates have been produced. In addition, all plants also produce agricultural limestone.

Practically all of the operations were started as quarries, but due to increasing cost of removing overburden as well as advantages obtainable through year around operation and ability to obtain a cleaner product, tunnel mines were opened at six of the three plants. The three remaining quarry operations are at Upton, Mount Vernon, and Irvington.

Mining operations are very similar, all employing a room and pillar system with headings about 28-ft. high and 38-ft. wide, and pillars about 75 to 100 ft. apart. Headings vary, of course, dependent on the local conditions found at each mine. Drilling and blasting methods are identical. Holes are drilled in rows by Cleveland and Sullivan wagon drills on each side of the center line of the heading, vertically up the face and converging towards the center line to form a V. On either side are drilled three more rows, spaced about 4½ ft. apart. Cartridges of 1¼- x 8-in. No. 3 Hercomite are placed in the heading holes and shots are fired so that the rows forming the V go off first, with delayed exploders firing the remaining rows. With this method, the center is blown out first, and the remaining shots cause the rock to fall in towards the center. Sullivan Stoppers are used to drill holes in the ceiling, which are then loaded and fired with No. 2 Gelamite cartridges, 1½- x 8-in. Experience has shown that this method leaves a very smooth ceiling.

High Bridge Plant

Located on the Kentucky River in geologic strata of Ordovician age, is the High Bridge plant, which is a mining operation. Blasted stone is pulled up an incline for discharge into a 28- x 36-in. Traylor jaw crusher. Crusher throughs are sent to a 10-A Telsmith crusher, from where the product goes to a 4- x 12-ft. triple-deck Robins vibrating screen and a 4- x 12-ft. double-deck Niagara vibrating screen. Oversize from the Robins returns to a No. 2 Telsmith reduction crusher, for further crushing. Railroad ballast and construction aggregates are produced at about 75 tons per hour. A separate plant at High Bridge produces agricultural limestone. Stone is hauled from plant bins or stockpile and dumped into a pulverizer. Product from the pulverizer goes by bucket elevator to a 200-ton capacity concrete silo for storage.

Mullins Plant

Located in Upper and Middle Mississippian strata is the Mullins plant on Round Stone Creek in Rockcastle County. Stone is taken from the mine up an incline directly to a 20-in.

Superior-McCully crusher. Stone then goes to a 5- x 12-ft. triple-deck Simplicity screen, which sends oversize to a 10-in. Superior McCully crusher and a 6-in. McCully crusher for further reduction. Throughs from the Simplicity screen are sent to a 4- x 12-ft. triple-deck screen for further sizing. The three crushers are operated in closed circuit. Plant capacity is about 175 tons per hour and is mainly railroad ballast and highway material.

Russellville Plant

Geologically the rock is in the Lexington series at the Russellville plant, in Logan County. Trucks, loaded in the mine, bring the stone to a 20-in. Superior-McCully crusher. Throughs are sent to a 4- x 12-ft. triple-deck Simplicity screen, with oversize going to a 4-ft. Symons cone crusher. Throughs from the Simplicity screen are sent to a 5- x 10-ft. triple-deck Symons and a 4- x 8-ft. triple-deck Symons screen for further sizing. Agricultural limestone production is handled here by two 3XB Gruendler pulverizers. Capacity of the plant is about 200 tons per hour of ballast, highway stone, and agstone.

Yellow Rock Plant

The Yellow Rock mine is in the Chester and Meramec series of Mississippian age, on the Kentucky River in Lee County. Stone is hauled from the mine in Western dump cars by two Plymouth locomotives. Cars dump into a 20-in. Superior McCully crusher. Stone is sent to a 5- x 10-ft. triple-deck Simplicity screen, oversize going to a 4-ft. Symons cone crusher and throughs going to a 4- x 12-ft. double-deck Niagara screen for further sizing. Capacity is about 150 ton per hour, of ballast, highway stone and agstone.

Lilimay Plant

Geologically, the Lilimay mine is located in the Upper Mississippian formation. Geographically it is located in Hardin County, near Stephensburg. Blasted stone is hauled from the mine in quarry cars by Plymouth locomotives to the foot of an incline



Elevator from mine at right, Kentucky Stone Co., Tyrone plant. Finished material bins at the left

serving the plant. Cars drawn up the incline dump stone into a No. 7½ Austin crusher. Crusher throughs go to a 4- x 18-ft. rotary screen, which sends rejects to a 3-ft. Symons cone crusher. Throughs from the rotary screen are sent to a 4- x 8-ft. triple-deck Robins screen for sizing.

Tyrone Plant

The final mining operation to be described is the one at Tyrone, on the Kentucky River in Anderson County. Stone mined is of the Ordovician period. Many radical changes were made to this plant in the Winter and Spring of 1946, consisting of changing from line-shaft to V-belt drive throughout, adding an extra screen in addition to replacing the original screens with larger units, and changing all wiring to the push button type. The old wooden headframe of the elevator was torn down and replaced with steel. Crushing and screening operations are the same at this plant as at the others described, and the new changes have stepped up production from 90 to 120 tons per hour.

Upton Plant

Located in Hardin County is the Upton plant, which features a quarrying operation. Drilling is contracted for this quarry. Blasted stone is taken by trucks to a quarry car which moves up an incline to a No. 6 Gates style K crusher. Stone from the crusher goes to a 4- x 20-ft. rotary jacketed screen which sends oversize to a 6-in. fine reduction McCully crusher. Throughs from the rotary screen are sent to a 2- x 7-ft. Niagara screen for further sizing. Agstone is produced by a 3XB Gruendler pulverizer. Plant capacity is about 50 ton per hour.

Irvington Plant

The Irvington plant, in Upper Mississippian strata, is located in Breckenridge County and is also a quarrying operation. Holes are drilled to a depth of 3-ft. below the quarry floor and 6-in. in diameter, in the face which varies from 40 to 90 ft. in height. From 30,000 to 40,000 tons of stone are brought down with each blast. Trucks haul stone from the quarry directly to a 14-in. McCully crusher. Stone from the crusher goes to a 4- x 8-ft. triple-deck Symons screen. Oversize is sent to a 3-ft. Tel-smith gyrosphere while throughs go to a 3- x 8-ft. Symons screen for final sizing. Capacity is about 60 tons per hour of ballast, agstone, and highway stone.

Mount Vernon Plant

The Mount Vernon plant is in Rockcastle County and is in the Upper and Middle Mississippian strata. Stone is quarried from an open face pit, varying from 50 to 120 ft. in height. Drilling and blasting is prac-



Kentucky Stone Co. quarry at Upton. Note high face of quarry

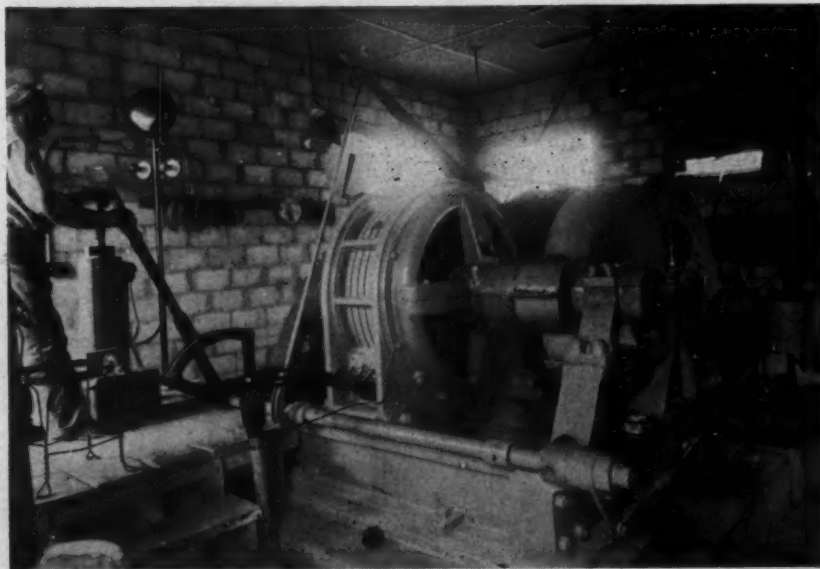
tically the same as at the Upton quarry. Trucks haul stone in the quarry to a car which is drawn up an incline to the plant. The car dumps stone into a No. 8 Austin crusher. Crusher throughs are sent to a 4- x 12-ft. Kennedy rotary screen, which sends oversize to a 10-in. fine reduction McCully crusher, while throughs from the screen go to a 4- x 12-ft. triple-deck Simplicity screen and to a 4- x 10-ft. double-deck Niagara screen for final sizing. Capacity is 125 ton per hour of railroad ballast and highway aggregate.

Louisville Crushed Stone Co.

One of the largest crushed stone plants in north-central Kentucky is the Louisville Crushed Stone Co. at Louisville. In 1942, quarrying operations were abandoned and a mine was opened, for the purpose of getting a better grade of stone, insuring operations in inclement weather, and eliminating the cost of removing over-

burden. The mine is of the conventional room-and-pillar system, with 40-ft. pillars and a 26-ft. ceiling. Stone is loaded to Euclid trucks which carry a 13-cu. yd. pay load to a primary crusher located on the floor of the abandoned quarry. Primary crushing is handled by a 28- x 36-in. Traylor jaw crusher, which is fed by a 3- x 10-ft. Traylor feeder. Crusher throughs are taken to the main screening and crushing plant at ground level by a 30-in. Pioneer belt conveyor, 300 ft. centers, which discharges over a 3- x 5-ft. single-deck Seco scalping screen with 2-in. sq. openings.

Oversize from the scalper drops into a 3-ft. Traylor gyratory crusher and throughs go to the boot of a 30-in. Link-Belt bucket elevator, 80 ft. centers. Stone crushed in the Traylor also drops to the boot of this elevator, which discharges to a 4- x 10-ft. Robins triple-deck vibrating screen. Equipped with 3-, 1½-, and



Hoist at Tyrone plant of Kentucky Stone Co. elevates 4-cu. yd. mine skip cars up a 265-ft. shaft, dumping to primary crusher

OPERATING TRENDS



At Louisville Crushed Stone Co. plant stone is crushed in primary crusher in quarry and moved to main plant by covered belt conveyor

$\frac{1}{4}$ -in. sq. openings on the three decks, this screen sends rejects to another screen or to a belt conveyor for movement to other crushing operations, while throughs from the lower deck are sent to another screen or to a surge bin.

When rejects from the Robins screen are to be rescreened before further crushing, they are sent to another 4- x 10-ft. Robins triple-deck vibrating screen equipped with 1-, $\frac{3}{4}$ -, and $\frac{3}{16}$ -in. sq. openings on the three decks. Rejects from the three decks are either sent to bins as finished material or are sent to the belt conveyor for movement to other crushing operations. Throughs from the lower deck of this screen also are dropped to the surge bin.

Throughs from the lower deck of the first Robins screen, sent to a smaller single-deck screen with $\frac{1}{2}$ -in. sq. openings, are sized and dropped to bins as finished material. Oversize is a pea stone and throughs are dust.

The 15-in. Link-Belt conveyor, 70 ft. centers, which receives rejects from both Robins screens, carries the stone to either a 1-ft. 6-in. TY Traylor gyratory crusher, or to a Nordberg impact mill for further reduction. Either crusher can be fed independently or both can be fed simultaneously through a split discharge at the end of the conveyor. Crusher throughs from both crushers are sent to the boot of the bucket elevator for return to the screening operations, in closed circuit.

A recent installation is a Symons cone crusher for the production of a greater quantity of $\frac{1}{4}$ - to $\frac{1}{2}$ -in. stone. The surge box, previously mentioned, discharges to a 24-in. Pioneer belt conveyor, 50-ft. centers, for movement to the 4-ft. Symons short-head cone crusher. From this crusher, stone is elevated by a 24-in. bucket elevator, 76-ft. centers, to a 5- x 14-ft. triple-deck Robins screen which sends sized stone to bins or returns

the stone to the conveyor for return to the Symons, in closed circuit.

Flexibility of operation is featured at this plant; any of ten different sizes of stone can be produced in the desired quantities through manipulation of flow from screening operations. In addition to the various sizes of commercial stone produced, about 33 percent of total production can be concentrated to make agricultural limestone. The stone in this area, which is in the Jeffersonville strata of Devonian age, has a calcium carbonate equivalent of better than 98 percent, which makes it highly desirable for liming purposes. A fleet of Flink and Baughman spreader trucks are maintained to supply the farmers in this area. Production capacity is about 140 ton per hour of all sizes.

Central Rock Co.

While many crushed stone producers in Kentucky have taken advantage of the benefits to be derived from mining operations, the mines are of the drift type. Central Rock Co., at Lexington, has a mining operation which is unusual in that it has a mine shaft 265 ft. deep. Originally, an open quarry furnished the stone for the plant, but due to several factors, including cost of overburden removal, and the desire to maintain year around production of dry stone, operations were changed to mining. Tests made showed that several layers of limestone were available closer to the surface than that now being utilized, but that these were thin-bedded or contained shale, and were not suitable for the high-grade product desired. Consequently, the mine was sunk deep enough so that stone from the Tyrone formation could be exploited. This stone is a dense, fine-grained limestone that is thick-bedded with only a very few thin shale partings. Another advantage realized by going down to the Tyrone is that immediately above this stone are



Ample headroom in limestone mine of Louisville Crushed Stone Co., permits handling with shovels and trucks

OPERATING TRENDS

three thin strata of bentonite, which, being impervious to water, effectively keep out water from the mine.

The average ceiling is 25 ft., and the standard room-and-pillar system is employed, with about half of the stone remaining in the form of pillars. About 58 ft. of the Tyrone member has been retained above the opening to act as a ceiling, and part of this can be used in the future should it become necessary.

Broken stone is loaded into electric trucks which discharge into 5-ton skips for elevation to the primary crusher. The length of time required to haul a loaded skip the 265 ft. to the surface is exactly one minute and eight seconds. Two skips are used, an empty one going down at the same time that the loaded one is being pulled up.

Production of 80 tons per hour is concentrated in eight to ten sizes of commercial stone for highway construction and railroad ballast.

Revamping Plants

Many producers are revamping plants and are adding new equipment to step up production. Construction programs, curtailed by the war, are now starting again. Blanton Stone Co., Frankfort, Ky., plans to increase production from 500 to 1000 tons per day by addition of a new crusher and new screening equipment. The new crusher, a 30- x 42-in. Diamond jaw, will crush a larger size and the reduction will be made by the present primary crusher. While only five sizes are made now, the new arrangement will allow production of eight sizes.

Another plant making changes is the Caldwell Stone Co., at Danville. Included in the additions to be made are a 3-ft. Symons short head cone crusher, bucket elevator, a 525-hp. Buckeye power unit, and a 3- x 8-ft.

Cedarapids double-deck vibrating screen. Production capacity will be increased from 700 to 1000 tons per day. The primary purpose for installing the cone crusher is to increase the production of chips ($\frac{1}{2}$ -in. stone), for which there will be a good market. Production of chips is expected to double with this installation.

Hopkinsville Stone Co., Hopkinsville, Ky., long known as an important producer of agstone as well as commercial stone, is changing quarry locations, since the present one is expected to be worked-out in a few years. The new quarry will be located about $\frac{1}{2}$ mile from the plant, and a new 30- x 42-in. Traylor jaw crusher will be installed near the quarry for primary crushing. Sufficient belt conveyor will be added to carry crushed stone from the primary crusher to the main plant, where the present primary will be used as a secondary crusher. Screening capacity in the plant is such that it will handle almost twice as much stone as is now being fed to it. Therefore, stone will be reclaimed from both quarries until the old one is worked out. Production figures show that this plant has produced 200,000 ton in six weeks, a figure which is expected to double with the new arrangement.

Cedar Bluff Quarry, Princeton, Ky., has moved stone from a mine to the crushing plant by trucks for some years. To insure a more constant flow of material, plans are now under way to install a primary crusher in the quarry, near the mine opening, with belt conveyor to move stone to the main plant. An increase in production of 25 percent over the present 150 tons per hour is expected with the addition of a 30-in. Allis Chalmers gyratory crusher in the quarry. Two 450-ft. Continental Gin Co. belt conveyors will carry the stone to the plant. The



Mine hoist bucket in position to discharge to crusher after elevation in 265 ft. shaft, Central Rock Co., Lexington, Ky.

one conveyor will feed the second through a transfer house half way up the 900-ft. distance from quarry to plant. Feed at the plant will be into a surge box with a 700 ton capacity, to help insure steady production at the plant in the event that a shut down occurs in the quarry. Installation of a new 48-in. Williams hammermill to augment the two now in service will step up agstone production.

Cerulean Stone Co., Cerulean, Ky., although primarily an agstone producer, makes stone sizes for highway construction. Primary crushing is done in a No. 16 Allis Chalmers gyratory crusher, and further reduction is made by a 3-ft. Symons cone crusher, a Gruender hammermill and a Jeffrey hammermill. Screening is done on a 4- x 14-ft. Simplicity triple-deck screen and a 4- x 6-ft. Deister double-deck screen. About 70 percent of production is agstone.

Sand and Gravel Plants

Sand and gravel aggregates suitable for state highway construction are obtainable only in the Ohio River. Aggregates occurring in the Ohio River are composed largely of glacial residue with some native or local stone. The glacial material, a residue of the Labradorian Ice Sheet, consists principally of Eastern Canadian and Labradorian granite, Medina sandstone, and southeastern Canada and New York fresh-water limestone. The native stone is a breakdown of the adjacent coarse sandstone and fresh-water limestone.

Located in the Louisville area are a number of sand and gravel producers, all operating dredges in the Ohio River. Included among these producers are the Ohio River Sand Co., Inc., Nugent Sand Co., The E. T.



Main plant of Blanton Stone Co., Frankfort, Ky. Crusher house at the right and finished product bins to the left

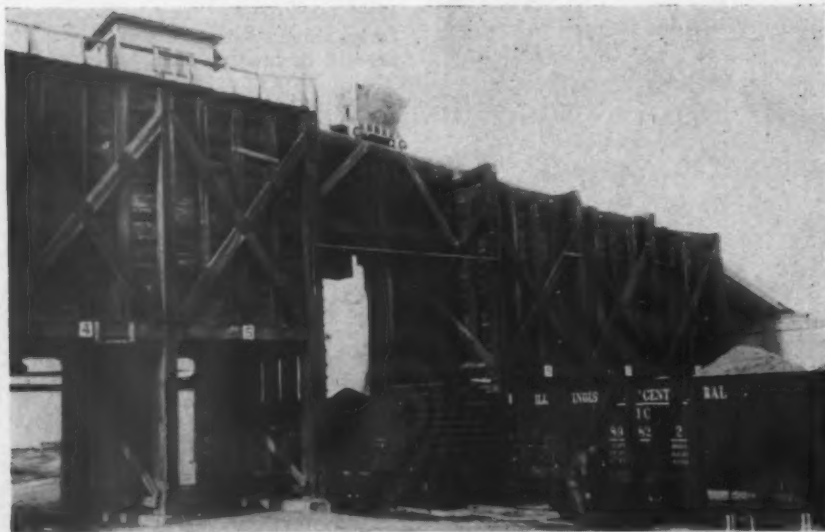
OPERATING TRENDS



Trucks transport stone from mine to crushing plant of Cedar Bluff quarry. Belt conveyor and crusher in quarry will take over this operation this spring



Cedar Bluff Quarry Company's plant at Princeton, Ky.



At Federal Materials Co. plant at Paducah, Ky., the car travelling above can discharge to any desired bin

Slider Co., Inc., Worrall Bros., Inc., and Louisville Sand and Gravel Co.

The Ohio River Sand Co., Inc., operates two dredges, one with a capacity of 400 tons per hour, and the other with a capacity of 600 tons per hour. Crushing and screening is done on the dredges and material transported to the unloading plant is placed in stockpiles by a Brown Hoist and a system of belt conveyors. The hoist, with an 85-cu. ft. bucket, can handle 250 tons per hour. Aggregates in eight sizes are stocked in a storage area with a capacity of 150,000 cu. yds.

Louisville Sand and Gravel Co. provides most of its material for the Colonial Supply Co., for the purpose of making ready-mixed concrete. During the war years, a fleet of 134 transit mixers was in use in several locations in the State as well as in adjoining States. Local demands are now being handled with a fleet of 42 mixers, and production capacity is about 500 cu. yd. per day. The Barrow-Agee Laboratories are now proportioning the mix as well as running tests and making samples of raw materials and finished concrete for the Colonial Supply Co. This added service was put in operation to provide a means of further serving customers.

Located in Paducah is the Federal Materials Co., which combines sand and gravel operations with ready mixed concrete production. Sand and gravel is dredged from the Ohio River and taken to the plant at Paducah. The dredge, powered by a 350-hp. Atlas Diesel, is equipped with a 10-in. Amsco pump and screens and log washer. Gravel is stocked in several sizes at this plant as well as at unloading points at Joppa, Ill., and Cape Girardeau, Ill. At the Paducah plant, material is taken from barges by a clamshell which dumps into a hopper. Feed from the hopper is to cars which are pulled up an incline by cable hoist to bins. The eight 200-ton capacity bins have bottom discharge for truck loading, and four of them can feed directly to a belt conveyor that moves material to a bucket elevator which feeds the ready mixed plant.

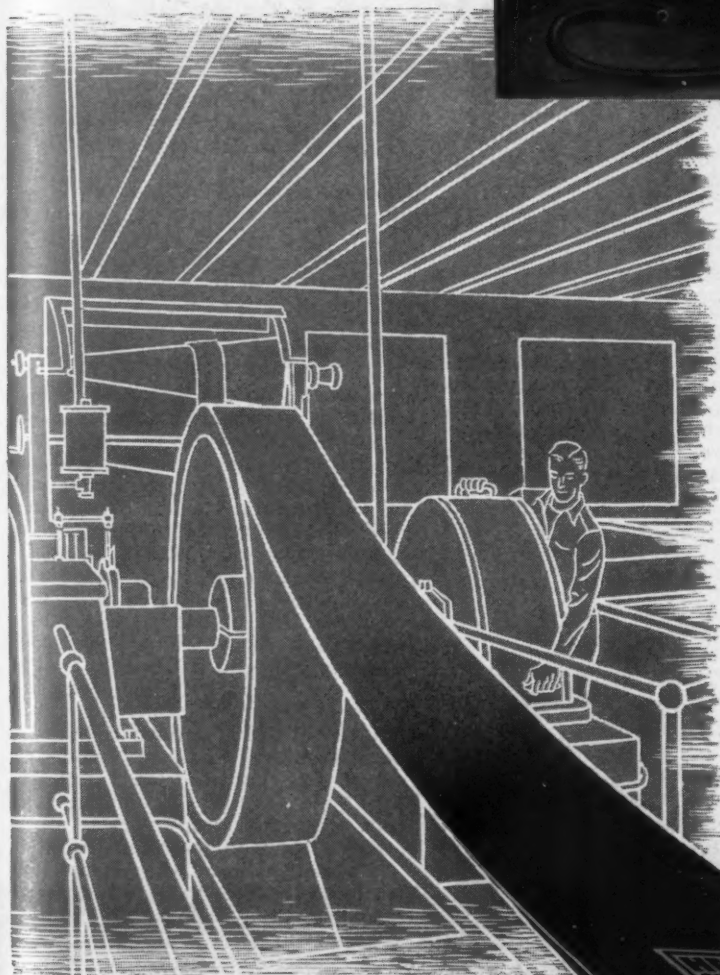
Union Sand and Gravel Co., Morganfield, Ky., is another producer recovering sand and gravel from the Ohio River. Equipped with a Holtz 8-in. gravel pump, the dredge has a capacity of 125 tons of solids per hour. Pump discharge is fed to gravity screens, oversize being chuted overboard to waste and material passing the screens being chuted to barges. Material is taken to the storage plant at Morganfield where it is unloaded by crane and stockpiled.

Rock Asphalt

Kentucky is particularly fortunate in the deposit of natural rock asphalt
(Continued on page 90)

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Convenient ramp permits free movement of trucks at Hopkinsville Stone Co. plant. Note dust collector to the left which helps to keep the plant clean and saves a valuable by-product

(Continued from page 88)

occurring near the Mammoth Cave region, which is being quarried and shipped by the Kentucky Rock Asphalt Co., Kyrock, Ky. The average thickness of the veins of rock asphalt quarried are 18-ft., with overburden of about 30 ft. in thickness. Production capacity is about 200,000 tons per year, and is processed by a series of crushing and screening operations before delivery to barges for shipment to stockpiles at Bowling Green.

Plans have been made to move the plant from Kyrock to Sweeden, utilizing the old equipment, but building an entirely new building with all modern ideas. Power will be changed from steam to diesel in the quarry and from steam to electricity in the plant. Trucks will haul from the quarry to the plant instead of the steam dinkies formerly used, and trucks will also haul the finished material to rail points instead of having it shipped by barge. The new plant will be centrally located between five sources of supply.

Portland Cement

Cement producers for the past 40 years, the Kosmos Portland Cement Co., with the plant at Kosmosdale, near Louisville, has a daily capacity of 4000 bbl. per day. The quarry is about 27 miles from the plant, and stone is delivered by barge down the Ohio River to the unloading dock where it is taken by clamshells and placed in hoppers. Trucks deliver the stone from the unloading dock to ground storage, a distance of about 500 yards.

Preliminary grinding is done by Bradley Hercules mills, and finished grinding by Allis-Chalmers tube mills. The tube mills are in closed circuit with Sturtevant separators. There are six kilns in operation at the plant, two 8½- x 125-ft., and four 7- x 6- x 100-ft. This plant has a dry process, waste-heat operation.

An interesting feature of this plant, which was installed about 1940, is a continuous proportioning system based on the use of Jeffrey-Traylor Waytrols. The plant uses a four-component mix, consisting of limestone, silica, iron oxide, and clay. The four materials are stored in steel bins, and all four products can be sent to a 24-in. steel pan conveyor under the bins. Crushed and dried limestone is fed at the far end of the conveyor. Here the stone flows out of a double cone-bottomed bin over an electrically-vibrated pan that is a part of the Jeffrey-Traylor Waytrols. Material moves along this pan to a weighing conveyor, which is in effect, a pair of scales mounted on a fulcrum,



Ready mixed concrete plant of Federal Materials Co., Paducah, Ky., which receives aggregates by belt conveyor and bucket elevator system

and which moves up and down according to the load. A variation in the load on this pan causes a slight vertical movement in it, which is tied into the electrical system serving the pan in such a manner as to increase or decrease the intensity of the vibrations, thereby increasing the flow of materials.

Silica sand, iron oxide, and clay are fed by smaller, individual Waytrols, thus the four components are blended into a continuous and accurate mix with each material being individually weighed.

Articles on this plant appeared in the Dec., 1938, issue and the July, 1943, issue of *Rock Products*, on pages 29 and 48.

Kentucky Testing Laboratory

Located on the campus of the University of Kentucky, at Lexington, is a new testing laboratory connected with the Kentucky Department of Highways. Here are run tests of materials, specimens of finished concrete, and many other tests. The building was completed in 1942 and due to war-time restrictions on equipment, was not completely equipped. It is planned to have the laboratory fully equipped and manned in 1946.

There are two floors in the building, including an area on the roof for weathering concrete cylinders. On the first floor are three freezing and thawing units, which will be replaced soon with the latest type of equipment. Also on this floor is a testing machine to determine modulus of rupture and modulus of elasticity of concrete specimens. Loss of strength during freezing and thawing cycles is found on this machine. The modulus of elasticity is determined by an audio-frequency oscillator, a Sonic materials analyzer, and a cathode ray oscilloscope. The laboratory is also equipped with an aggregates crusher, mechanical sieves, and a concrete mixer. One room on this floor is used as a curing room. It has controlled moisture and temperature for curing specimens under various conditions. Another room contains a test track which has controlled load, temperature, and moisture. In another section of the first floor is located a Los Angeles abrasion testing machine.

The second floor, when completely equipped, will have a chemical laboratory, a bituminous mix testing department, a soil study department and the necessary machines to test specimens. Already installed are testing machines to determine the stability of bituminous mixes, ovens, mixers, centrifuges for extracting bitumen from road mixes, and a weatherometer.

Prof. D. V. Terrell of the University of Kentucky is the director of the laboratory, and L. E. Gregg is associate research engineer.

(Continued on page 92)

Firestone

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A SENSATIONAL NEW OFF-THE-HIGHWAY TIRE

the
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Kentucky Specifications for Highway Materials

THE STATE Highway Department of Kentucky has recently issued (October, 1945) a new book of Standard Specifications (dated February 10, 1945) and is proceeding to let highway contracts in conformance with them. T. H. Cutler, state highway engineer, speaking before the recent convention of the National Sand and Gravel Association, said that up to that time he had found no difficulty in getting bids from contractors within his estimates. It developed, however, from the discussion, that he has been constantly raising his estimates to keep pace with increased prices of materials and labor, and that such estimates are approximately 20 percent higher than pre-war.

In general the new specifications are of particular interest because they are very specific as to the rates of wages and terms of employment for contractors. These must be set forth in detail and made a part of the contract. Labor of course must be subject to the Federal laws which require not less than time and a half for everything over an 8-hour day and/or a 40-hour week. Labor is classified into skilled (26 jobs listed); intermediate grade (52 jobs); un-

skilled (49 jobs). The contractor is required to get his unskilled labor, so far as possible, from inhabitants within the county where the construction work is done.

These labor employment requirements apply to subcontractors, but not to established commercial producers. For example, if the contractor elects to produce his own aggregates from side-of-the-road pits, his labor employment requirements are those given in the contract; they apply also, if he sublets the production of side-of-the-road materials. When he purchases his materials from "established and recognized commercial plants," he is relieved from worries about that part of the job; it becomes the producer's responsibility, not his. However, hauling from rail head or water delivery point to the job, unless done with the contractor's own equipment or by recognized commercial hauling companies is considered as subcontracting under the specifications. This is obviously designed to avoid the conflict of social security and transportation tax laws, which have caused so much confusion in the industry.

Among other features of interest to ready-mixed concrete producers, as



At Federal Materials Co., Paducah, Ky., plant barges are unloaded by clamshell which dumps into hopper. Hopper feeds cars which are pulled up incline by hoist to bins

well as to engineers, are specifications for Vinsol resin solution and a table of quantities of Vinsol resin and sodium hydroxide required for 50-gal. batches of solutions, containing various percentages from 0.001 to 0.015 by weight of Vinsol resin. The table covers quantities for 1- to 10-sack batches of concrete.

Cement

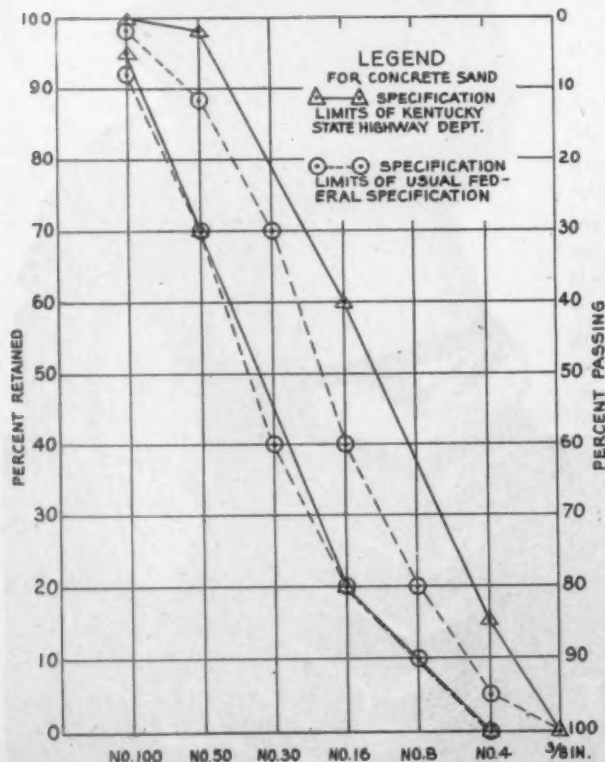
Specifications for portland cement are the usual A.S.T.M. ones for Type I (normal), Type III (high early strength), and Type 1a (cement treated with air-entraining admixtures). The specifications for concrete also include a mixture of portland cement and natural cement, and the natural cement used must contain a water-repellent of tallow or paraffine.

The specifications for single course concrete pavement cover four types of mixtures: Type A—concrete made with normal portland cement; Type B—concrete made with high early strength portland cement; Type C—concrete made with treated portland cement, or normal portland cement blended with natural cement; Type D—concrete made with normal cement to which has been added, at the mixer, a Vinsol resin solution, or other approved air-entraining agent.

Ready-Mixed Concrete

Central-plant mixed and transit-mixed concrete are permitted under certain restrictions. It must first of all meet the specifications for pavement concrete—a slump of not less than 1½ in. and not more than 2½ in. when crushed stone is the coarse aggregate; and 1½ to 3 in. when gravel is used. The concrete must be delivered within 1 hour of the time water is added.

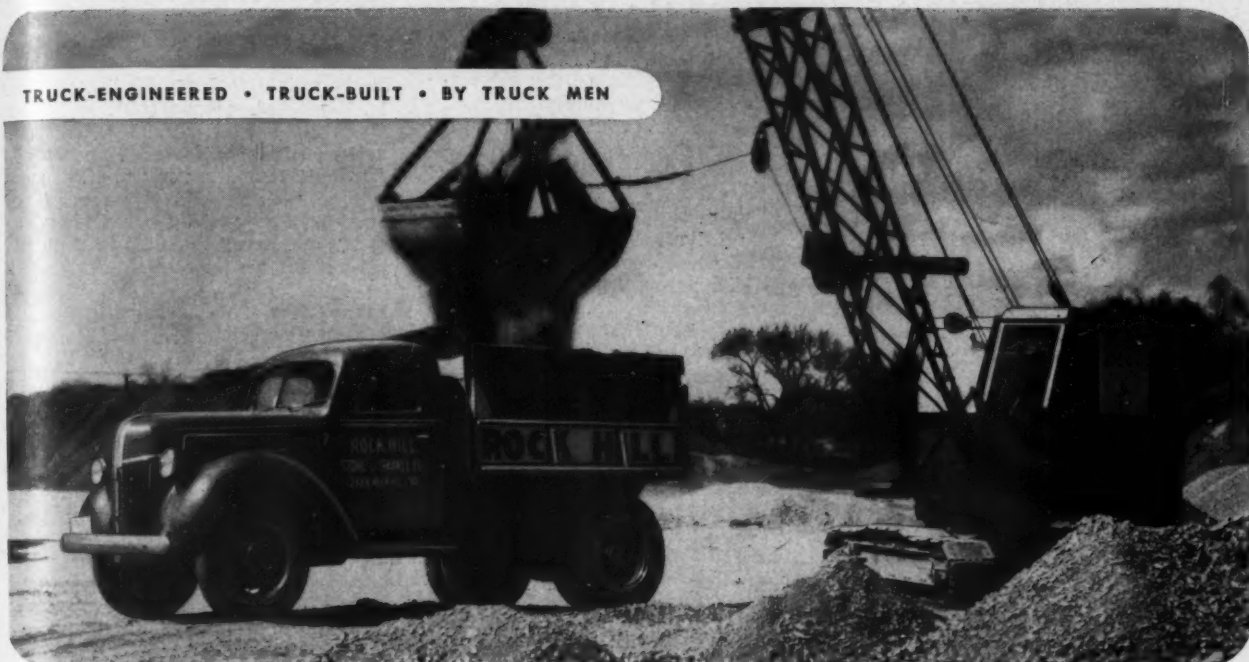
(Continued on page 94)



Graph showing how Kentucky State Highway specifications for concrete sand compare with Federal specification limits

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See ad on page 105 for list of
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Equipment Division
Holyoke, Massachusetts

In applying the slump test, an average of three independent tests is taken, but no individual test shall exceed by more than $\frac{1}{2}$ in. the specified average. The engineer specifically reserves the right to order discontinuance of the use of ready-mixed concrete at any time.

Fine Aggregate

Sand is defined as the product of natural disintegration or crushing of a siliceous rock. The physical properties are defined in a little more detail than usual, as follows:

Deleterious substances not to exceed:

	Percent by Weight
Clay lumps	1
Coal and lignite	1
Material finer than 200-mesh	
(a) In concrete subject to abrasion	3
(b) All other classes of concrete	5
Other deleterious substances (such as shale, alkali, mica, coated grains, soft and flaky particles)	1

The sum of all the substances shown above must not exceed 5 percent for concrete subject to abrasion, and 7 for all other classes of concrete.

The sand must pass a soundness test of five alternations of sodium sulphate solution with a loss not over 10 percent by weight (A.A.S.H.O., T-104). However, sand which has been used for concrete in similar proportions and has a good service record of five years or more will be accepted even if it fails to meet the soundness test.

The size requirements for concrete sand are as follows (see also chart):

	Percent
Passing $\frac{3}{8}$ in.	100
Passing No. 4	85 to 100
Passing No. 16	40 to 80
Passing No. 50	2 to 30
Passing No. 100	0 to 5

The gradation of sand from any one source must be reasonably uniform and not subject to these extreme variations. The gradation is certainly very liberal in the usual critical sizes—passing No. 16 and No. 50—permitting a coarser than usual sand.

Sand for bituminous mixtures must meet somewhat more exacting specifications. The deleterious substances are limited to 3 percent and the size gradation for most bituminous mixtures is as follows:

	Percent
Passing $\frac{3}{8}$ -in.	100
Passing No. 4	90 to 100
Passing No. 8	75 to 90
Passing No. 16	40 to 80
Passing No. 50	5 to 35
Passing No. 100	0 to 15
Passing No. 200	0 to 10

Preference is given to any sand meeting this grading requirement without blending, the reason being the difficulty in procuring a well blended product.

Coarse Aggregate

Crushed limestone, crushed slag and both crushed and natural gravel are used as coarse aggregate. Crushed limestone must pass the sodium sulphate test with a loss of not more than 15 percent, and the percent of wear (A.A.S.H.O., No. T-76) should not exceed 40 percent for base courses and for concrete, or 35 percent in surface courses and covering material. The specifications for crushed slag are the same, except that the slag must weigh at least 70 lbs. per cu. ft. (aggregate-compacted).

Gravel for bituminous surfaces is required to be 65 or 100 percent crushed (depending on use). The percent of wear must not be more than 35 percent. Gravel for concrete aggregate must meet the following physical requirements:

	Percent
Finer than 200-mesh, not more than	1
Shale	0.5
Coal or lignite	0.5
Clay lumps, not more than	0.5
Soft fragments, not more than	1.0
Other deleterious substances	1.0
Absorption, not more than	3.0

The loss in the sodium sulphate test must not exceed 15 percent. It is probably this test and the limit on absorption which cut out the chert gravels in the southern part of the state.

Size gradation for coarse aggregate is shown in a table of 14 standard sizes: (1) $1\frac{1}{2}$ - $3\frac{1}{2}$ in.; (2) $1\frac{1}{2}$ - $2\frac{1}{2}$ in.; (3) 1-2 in.; (36) No. 4—2-in.; (4) $\frac{3}{4}$ -1 $\frac{1}{2}$ in.; (47) No. 4—1 $\frac{1}{2}$ -in.; (5) $\frac{3}{8}$ -1 in.; (6) No. 4—1-in.; (610) 0-1 in.; (7) No. 4— $\frac{3}{4}$ -in.; (8) No. 8— $\frac{3}{4}$ -in.; (9) No. 8— $\frac{3}{8}$ -in.; (10) 0- $\frac{1}{2}$ -in.; (11) No. 8—No. 4. Aggregates for all purposes are compounded from these sizes.

The preparation of natural rock asphalt calls for its reduction to 100 percent passing $\frac{3}{4}$ in.; 99 percent passing $\frac{1}{2}$ in., and 80 percent passing No. 4.

Sub-Grade Material

The Kentucky highway engineers are among those who believe in stabilized subgrades, and the use of granular materials is merely incidental. The subgrades are rolled and treated with oil, calcium chloride or portland cement to stabilize them. For the calcium chloride stabilized subgrade, the final mix of aggregate and binder soil must conform to the following size gradation:

	Percent
Passing 1-in.	100
Passing $\frac{3}{4}$ -in.	80 to 100
Passing $\frac{1}{2}$ -in.	50 to 90
Passing No. 4	40 to 75
Passing No. 10	30 to 55
Passing No. 40	20 to 35
Passing No. 200	10 to 20

The fraction passing the No. 200 sieve shall not be more than two-thirds of the fraction passing the No. 40. It is obvious that drainage is not one of the objectives of the subgrade.

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Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs. Rock Drills and Air Tools that have

always set the pace for easy operation — available in a wide range of weights and sizes.

WORTHINGTON

Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division
Holyoke, Mass.

(Continued from page 71)

A difference of opinion was found on the subject of giving warning before blasting. Some quarries found that nearby residents made fewer complaints if they were forewarned, but others claimed that it called more attention to the blast and brought in more complaints than before.

Another question was raised as to

the timing of blasts; whether having time delay primary blasts would send one wave of vibration on top of another to multiply or to cancel the first. Dr. Leet said that the wave pulsations would probably be traveling at the same rate and would not overtake one another to multiply or cancel out, hence would have no effect.

Wage-and-Hour Law Interpretation

WITH Stirling Tomkins presiding "New Developments in application of the Wage-Hour and Walsh-Healy Acts to the Crushed Stone Industry," was the subject of a talk by L. Metcalf Walling, Administrator of the Wage and Hour and Public Contracts Divisions, U. S. Department of Labor, New York City. Mr. Walling called the attention of the industry to changes in interpretation of the Acts and explained the position of administrators in such interpretations. Administrators can only make a guess as to what future interpretations of the Bill will be; they have no power to give employers a definite statement, for the exact interpretation is left up to the courts. Opinions given to employers by the administrators should carry a great deal of weight, but they cannot be accepted as a guarantee. A proposal is now under consideration to empower administrators to interpret the law, and, at the same time, differentiate between wilful and non-wilful violations in imposing penalties. Thus far, neither of these proposals has been passed. As a result, the interpretation is still up to the courts, and may vary with the court personnel. A company that has plants in two different court districts may get two different interpretations of the same provision of the Bill. Hence, there is little protection for industries acting in good faith.

Mr. Walling mentioned recent changes in interpretations of the Acts. One is a change in the interpretation of the word "goods" to be used in interstate commerce. Where sand, gravel and stone for state use had not been liable to the provisions of the bill in the past, the new interpretation has made them liable if they are to be used on any interstate highway or railroad. This change will pertain only to material used since April 15, 1945, and will not apply to any used before that date. Another point in question is the fact that no limit has been set on the length of time that can elapse before an employee sues for back wages. There is now a suggestion by the Senate Labor Committee that the time limit for such cases be set at two years.

In his comments on the extent of government intervention in business affairs, Mr. Walling advocated con-

fining regulations to the fixing of a minimum wage, and not attempting to set occupational wage levels. Demands that the government set wages and a limit on profits are coming too close to infringing on free enterprise, he said.

In the discussion period that followed a question was raised about the applicability of minimum wage rates to physically disabled persons. The answer given was that there is a provision in the act to allow for such disability.

Discussion also revolved about the inability of employers to get definite interpretations of the acts. Mr. Walling remarked that administrators try to obtain test cases, such as the Schroeder case, that will be typical of many companies and will, by the decision obtained, set the pattern for the interpretation.

[Word had just been received, at about the time the convention started, that the U. S. Circuit Court of Appeals for the Tenth Circuit, in a two to one decision, reversed the decision of the Federal District Court in the Schroeder case which had upheld the Walling ruling. This decision means that the Tenth Circuit will not enforce the Walling ruling.]



Martin Hammerschmidt, Elmhurst-Chicago Stone Co., Elmhurst, Ill.



L. Metcalf Walling, Administrator, Wage-and-Hour law, to the left, chatting with S. P. Moore, Cedar Rapids, Iowa

Sales Psychology

JUDD C. BENSON, manager, Home Office Agency, Cincinnati, Ohio—Union Central Life Insurance Co., under the subject "Human Sales Psychology," presented some of the basic fundamentals in successful selling, with emphasis on the attributes essential in salesmen. Among those attributes are spark and enthusiasm, friendliness, the ability to think clearly in an interview and an honest desire to help the customer.

Mr. Benson particularly emphasized that a salesman have the poise and confidence stemming from knowledge which gives him prestige and the necessary courage and resourcefulness. He must build a reputation for honesty and character in order for the customer to recognize his word as being good.

Following his treatment of the general subject and attributes for sales success, he outlined some of the details for a desired sales approach. The first five minutes of a sales interview are of greatest importance. That period, he said, determines at what level of intelligence the salesman should carry on his sales story. Skill in interviewing is important, he said, and the successful salesman should anticipate questions to be asked of him. Throughout Mr. Benson's talk it was obvious that he considered knowledge regarding the product to be sold of extreme importance.

Rights of Employers

One of the highlights of the convention sessions was an inspirational address by The Honorable Wayne Lyman Morse, U. S. Senator from Oregon. Senator Morse's subject was "The Responsibilities and Rights of Employers in Labor Controversies," a field in which he is eminently qualified to speak. He had served as Pacific Coast Arbitrator from 1938 to 1942 and, with the backing of em-

(Continued on page 98)

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Hand Pump.

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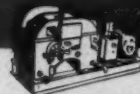
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Portable Presses

ROCK PRODUCTS, March, 1946

SALES PROMOTION

(Continued from page 96)

ployers and labor on the West Coast, he was appointed a public representative from the West to the War Labor Board. He was elected to the United States Senate in 1944.

Senator Morse sounded a warning that a period of economic conditions which could destroy America if not handled properly is now at hand. Economic democracy and political democracy are inseparable, he emphasized, in warning that we could become victims of the "isms" under the guise of democracy through the introduction of nice sounding terms such as the bill of rights and other slogans. The Senator was emphatic in his belief that the only way in which the nation can go forward and preserve individuality is under a private economy.

In the present controversy between labor and management, which he termed a general strike, he stated that labor has less to lose than management. He believes there is danger of mass revolution. He cautioned to be on the alert against "straight jacket" legislation, legislation such as that which started with legal restrictions in the beaten nations and which led to their downfall. In this regard he mentioned that the people have been conditioned during the war and that there is a natural tendency now to pass off troubles and turn to government for their solution.

Senator Morse sees no objection for labor to seek wage minimums through legislation, as a social aim, but objects to government compulsion in the obtaining of still higher wages. Labor contracts must be complied with, in his opinion. He believes that there is no right at all for jurisdictional dispute strikes and that they are against all principles.

American industry has not generally practiced free collective bargaining, he said, in mentioning that in a recent meeting between a major concern and union representation that there was no intention to settle differences. Yet, he believes such disputes should not be put up to government for settlement.

Our production efficiency must be maintained and improved and anything to retard it is a threat to our economy, according to his philosophy. Our choice lies between attaining the greatest production ever or inflation accompanied by a prolonged scarcity of goods with the collapse of the value of the American dollar.

The so-called fact-finding boards are a far cry from arbitration decisions but only represent a mediation procedure, he said. Industry has a right to decent profits, he emphasized, in commenting on the present struggle to narrow the margins between costs and prices.

PRESIDED over by HARRY BRANDON, sales manager, Melvin Stone Co., Melvin, Ohio, the sales session opened with a talk on "Road Bed Preparation and the Merits of Stone Ballast" by J. E. Ott, Wallace Stone Co., Bay Port, Mich. Mr. Ott discussed current practices in the preparation of stone



Phillip Heim, Carbon Limestone Co.,
Youngstown, Penn.

for railroad ballast, and told how the specifications are changing to a smaller size of crushed stone. Where specifications had called for 100 percent 1- to 3-in. size ballast, more economical size now adopted by the American Railroad Specification is a 100 percent ¾- to 2-in. ballast. Mr. Ott also discussed methods of stripping and replacing ballast, and compared the relative merits of crushed stone and gravel used for this purpose.

A. T. GOLDBECK of the National Crushed Stone Association, Washington, D. C., commented on the research now under way in this field. He pointed out that the A.R.E.A. is making a series of tests on crushed stone and gravel railroad beds, and told how questionnaires had been sent out to many railroad companies in an effort to get information on ballast performance under actual practice. No definite conclusions could be drawn from the results of these questionnaires, however, because of the varying quality of corresponding aggregates in different districts. He also commented on the tendency toward reduction of the size of crushed stone used and pointed out that this reduction is limited by drainage. The problems of mud pumping and subgrade difficulties were mentioned, but Mr. Goldbeck remarked that each subgrade problem

is different from any other and must be studied individually for a solution.

Promoting Macadam

MURRAY D. SHAFFER, engineer-director, Macadam Pavements, Inc., Columbus, Ohio, talked about the "Opportunities for Extending the Use of Macadam Pavements." During recent years macadam pavements have been neglected, Mr. Shaffer said, and the purpose of his association is to improve and extend the use of macadam pavements in Ohio wherever possible. The association has two committees; a technical committee, comprising materials producers who study the design of macadam pavements; and a second committee of equipment manufacturers interested in designing machinery for improving macadam pavement construction methods. Mr. Shaffer pointed out several advantages of the macadam type pavement, and cited several Ohio state routes as examples that have given excellent service.

The remainder of the meeting involved a discussion of sales practices. First point under discussion was the desirability of having salesmen plan far enough ahead of any project to be able to discuss it with the authorities during the formative stage. Mr. Brandon said that his company had always made a practice of obtaining more knowledge about a local situation than the highway department. In this way a salesman can give aid to the design engineer and in return, get a more welcome reception than one who would only be able to tell the authorities the type of specification desired by his company.

T. C. McPOYLE, John T. Dyer Quarry Co., Birdsboro, Penn., discussed the question of discrimination against crushed stone in specifications. He cited one example and told of his company's efforts to have this specification revised. The first attempt was by way of an explanation of the company's stand to the authorities. This failed, and they approached the local automobile club, fire insurance underwriters, transportation companies, and similar organizations to point out advantages favoring crushed stone aggregate. He asked for suggestions as to further steps that might be taken. Mr. Goldbeck suggested reference to several building codes in which crushed stone is given preference.

Crushed Stone vs. Gravel

CARL J. STENZ, New York Trap Rock Corp., New York City, discussed the relative merits of crushed stone

(Continued on page 100)

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from Slag



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coral rock, etc. It is ideal for reshaping and converting a material containing objectionable slivers, flats or slabs into a marketable product. Where specifications require properly shaped particles, the Symons Impact Crusher will best produce such materials.

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SYMONS IMPACT CRUSHER

(Continued from page 98)

and gravel with respect to fire protection. He suggested that Mr. Goldbeck prepare a brief on this subject.

The question of the use of the 1:2:4 concrete proportions in specifications was raised, and J. E. Gray, field engineer for the National Crushed Stone Association, said that many contractors consider this specification too harsh and object to its use. A discussion followed and it was agreed that this method was used more as a figure of speech to refer to correct proportioning.

The question of creating new sales opportunities was raised. Mr. Goldbeck said that one bituminous concrete company with available plant capacity had sent out salesmen to promote the use of its product in driveways and other small projects. In this way the plant operated at a profit when it would otherwise have had a loss. Mr. Brandon furthered this idea by telling of some companies that have been paving feed lots, dairy barn floors, and auditoriums, lining corn cribs and specializing in similar small jobs.

L. P. Burgess, Bituminous Concrete Products Association, Columbus, Ohio, answered a question regarding the relative behavior of stone and gravel in bituminous pavement construction. He remarked that the public did not raise the question because they were interested only in the end result. His experience was that in Ohio bituminous concrete construction specifications allowed the use of the local materials, either crushed stone or gravel, with satisfactory results. Deposits occur in such a way that a high-stability type of aggregate is available in heavily traveled districts, while a lower type aggregate is near roads that are less traveled. The stability of the local aggregate has been sufficient in most cases. Their problem has been more in keeping each type of aggregate up to its own required quality than it has been in contrasting one with other types of material.



Nearly 100 attended the breakfast meeting of the Manufacturers' Division, National Crushed Stone Association Convention

Manufacturers' Breakfast Meeting

MANUFACTURERS' DIVISION, National Crushed Stone Association, held its annual business meeting in connection with the National Crushed Stone Association convention. The principal items of business were to discuss the time and place for the resumption of convention exhibits and the election of officers.

J. B. Terbell, American Manganese Steel Division, The American Brake Shoe Co., New York, N. Y., was elected chairman of the Division, succeeding Milo A. Nice.

Vice-chairmen are:

Cott Farrell, Easton Car and Construction Co., Easton, Penn.
R. C. Johnson, Simplicity Engineering Co., Durand, Mich.
J. Craig McLanahan, McLanahan and Stone Corp., Hollidaysburg, Penn.
L. C. Mosley, Marion Steam Shovel Co., Marion, Ohio.
C. H. Roberts, Traylor Eng. and Mfg. Co., Allentown, Penn.
J. A. Trainor, Taylor-Wharton Iron and Steel Co., Highbridge, N. J.

The Board of Directors comprises the following:

E. C. Anderson, Kensington Steel Co., Chicago, Ill.
A. E. Conover, Robins Conveyors, Inc., Passaic, N. J.
W. C. Davis, Atlas Powder Co., Wilmington, Del.
Irving Deister, Deister Machine Co., Fort Wayne, Ind.

M. A. Eiben, Northern Blower Co., Cleveland, Ohio.
S. S. Ellsworth, Ensign-Bickford Co., Simsbury, Conn.
Cott Farrell, Easton Car & Construction Co., Easton, Penn.
R. F. Feind, Allis-Chalmers Mfg. Co., Milwaukee, Wis.
J. Harper Fulkerson, Cross Engineering Co., Carbondale, Penn.
E. J. Goes, Koehring Co., Milwaukee, Wis.
E. M. Heuston, Bucyrus-Erie Co., South Milwaukee, Wis.
C. S. Huntington, Link-Belt Co., Chicago, Ill.
R. C. Johnson, Simplicity Engineering Co., Durand, Mich.
Wayne King, W. S. Tyler Co., Baltimore, Md.
B. R. Maloney, E. I. Du Pont de Nemours & Co., New York City.
J. Craig McLanahan, McLanahan & Stone Corp., Hollidaysburg, Penn.
L. C. Mosley, Marion Steam Shovel Co., Marion, Ohio.
R. M. Murdock, The Frog, Switch and Mfg. Co., New York City.
Milo A. Nice, Hercules Powder Co., Wilmington, Del.
F. O. Reedy, Kennedy-Van Saun Mfg. & Eng. Co., New York City.
C. H. Roberts, Traylor Eng. & Mfg. Co., Allentown, Penn.
Bruce G. Shotton, Hendrick Mfg. Co., Pittsburgh, Penn.
P. C. Tennant, The Texas Co., New York City.
J. A. Trainor, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.
R. E. Wiley, American Cyanamid & Chemical Corp., New York City.
Roy Wills, Lima Locomotive Works, Lima, Ohio.
W. A. Wirene, General Electric Co., Schenectady, N. Y.

J. R. Boyd, administrative director of the National Crushed Stone Association, is secretary of the Manufacturers' Division and L. W. Shugg, General Electric Co., Schenectady, N. Y., is director of exhibits. Messrs. Terbell, Nice and Shugg were elected to represent the Manufacturers' Division on the Board of Directors of the National Crushed Stone Association.

The Division voted in favor of holding exhibits in conjunction with those for the National Sand and Gravel Association and the National Ready Mixed Concrete Association on an every other year basis but the decision to hold a separate exhibit in 1947 was held in abeyance for further consideration.



Left to right: Bruce S. Campbell, Jr., Bruce S. Campbell, and Richard Campbell, one of several father and son groups at the convention

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Toledo

ROCK PRODUCTS, March, 1946

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Kentucky, Tennessee and, on a limited scale, into Delaware and Maryland.

Sales Promotion

THE FINAL OPEN SESSION of the Agricultural Limestone Division was devoted to a discussion of sales and sales promotion and the transaction



S. P. Moore, left, of Concrete Materials Co., Cedar Rapids, Iowa, and R. E. Sansom, American Limestone Co., Knoxville, Tenn., discussing a problem of mutual interest

of Association business under the chairmanship of Howard M. Thomas.

MANAGING DIRECTOR HENRY A. HUSCHKE opened the meeting with a showing of slides relative to the subject of soil liming, as being the type of illustrative material that should be used by the industry in making the farmer conscious of the gains he may secure through liming his soil. The slides were from actual photographs taken by Mr. Huschke in his travels showing the results in growing crops from limed soils versus unlimed acreage, the actual spreading and data to support the value of liming.

W. H. MARGRAF, manager, Agricultural Limestone Division, Marble Cliff Quarries Co., Columbus, Ohio, then presided over a round table discussion on sales and promotion. Posters of the type used by the Processed Limestone Association, Inc., in Ohio were placed on display to illustrate successful themes for advertising to farmers. P. E. Heim, Carbon Limestone Co., Youngstown, Ohio, told of the results being derived from the Ohio groups program to stimulate the spreading of agstone in off-peak seasons. Ten percent of the limestone spread in 1943 was made in the month of December, comparing with one-half to one percent a few years ago.

The meeting and convention closed with the presentation of resolutions and an inspiring talk by chairman-elect S. P. Moore. Mr. Moore reminded the convention that someday the industry will be faced with in-

land. Where local dealers enter the picture and long rail hauls are not needed the plan is working out most favorably.

tense competition for the farmer's dollar, in urging that more attention be paid to sales promotion. He suggested that attention be paid to the younger farmer in the direction of sales effort and urged that every effort be made to increase membership in the Agricultural Limestone Division.

The resolutions passed expressed appreciation to the Board of Directors of the N.C.S.A. for its creation of the Division and its financial support, and to the government for its efforts in soil conservation. Further, it was pledged that the group would continue publicity and promotion in an earnest desire until farmers realize the value of soil conservation to the nation.

Mineral Nutrition

DR. H. R. BIRD, Biochemist in Charge of Poultry Nutrition Investigations, Bureau of Animal Industry, Beltsville, Md., was the first speaker in the Friday morning session of the Agricultural Limestone Division. His talk, "The Mineral Nutrition of Poultry and Farm Animals," stressed the importance of limestone in the formation of egg shells and the bone structure of poultry. Limestone and salt were virtually the only two ingredients in poultry feed that were not replaced by substitutes during the war. Although the exact amount of limestone necessary in a poultry diet is still unknown, the recommended diet for laying hens requires about 2.25 percent calcium and 0.75 percent phosphorus. To fill this need approximately 400,000 tons of limestone and oyster shell should be used in poultry feed each year.

In a discussion that followed his talk Dr. Bird was asked about the



J. M. Reynolds, Canada Crushed Stone Co., left, in a huddle with Redington Moore, General Crushed Stone Co.

specification for limestone used in poultry feed. He answered that the principal requirement is that it consists primarily of CaCO_3 . As for the size, agstone should be ground to a flour for use in a mash, or can be used in a coarser form as grit, he said.

Financing Liming Program

J. B. ANDERSON, Manager, Bank and Public Relations Department, Federal Reserve Bank of Cleveland, was the second speaker. In his talk, "A Campaign for Long-Term Liming Material Loans to Farmers," Mr. Anderson discussed the idea behind the program of granting loans to farmers and told how it has been sponsored by the Federal Reserve Bank of the 4th District. This program should be particularly interesting to agstone producers because the loans are suited particularly well to financing liming programs and are spread over a term of five years in order to give the farmer time to receive some of the benefits from his investment. In this way, and by helping to provide liming materials and spreading equipment in districts where farmers had been finding difficulty in obtaining it, the bank hopes to stimulate farmer interest in more extensive use of agstone. He urged the industry to aid in the promotion of this program.

In the program it is pointed out to each farmer that even though he may have come out of the war with an increased bank balance, the loss he has suffered through exhaustion of the fertility of his soil will offset this cash gain. Before a farmer can apply for one of these loans he must have the approval of the agricultural agent, and the banks are interested mainly in only those farmers using a sound program of soil conservation. Small banks are showing a great interest in this program, and many have added agricultural experts to their staff to increase their service to the farmers. In addition to the Federal Reserve Bank of the 4th District, serving mainly Ohio, other banks are stimulating this movement in Missouri, Pennsylvania, Kentucky, Connecticut, and many other farming states. A booklet describing the purpose and the outline of this program and entitled, "Country Bank Action on the Soil Front," has been published by the Federal Reserve Bank of Cleveland.

Why Farmers Must Lime

Third speaker for the morning was Professor Emil Truog, Chairman, Department of Soils, University of Wisconsin. In his talk, "Why Farmers Must Lime," Professor Truog emphasized that the future of this country depends as much on the liming of the soils as it does upon any other factor, and he estimated that 40,000,000 tons of agstone should be used on the soils

(Continued on page 106)

This plant, with 25" x 40" Jaw Crusher and Apron Feeder, will produce 50 yards of 2-inch crushed rock per hour.

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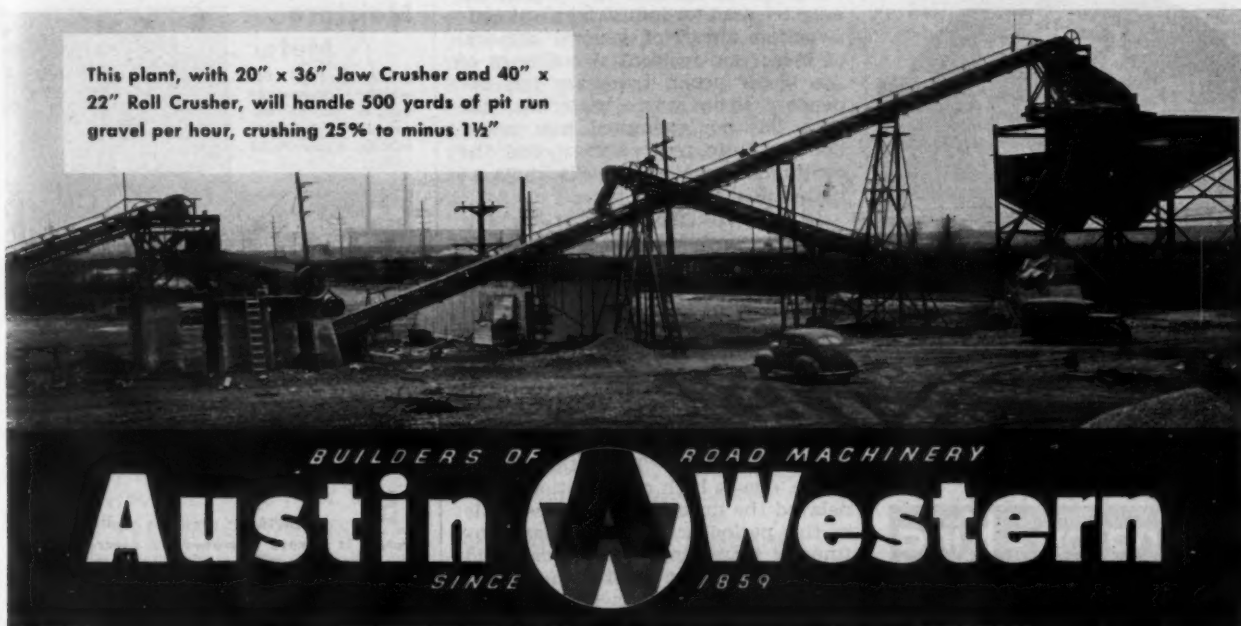
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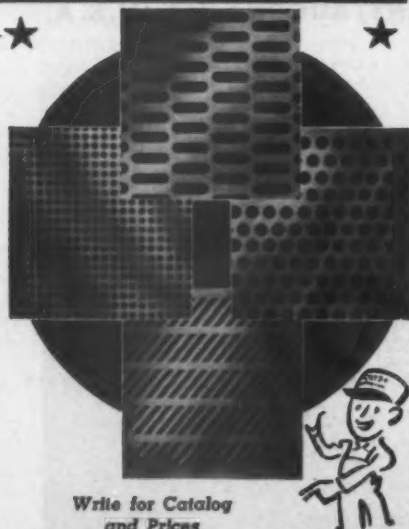
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Outlook for Business

THOMAS S. HOLDEN, president, F. W. Dodge Corp., speaking on "Construction in 1946," at the recent National Sand and Gravel Association convention, said that construction at this time presents a picture of healthy revival and a sound prospect of progress. However, he pointed to the strike situation and price inflation followed by price deflation as two serious threats to progress.

There was no let-down in construction activity following conclusion of the wars and, he said, in every single month after January, 1945, the dollar volume of contracts considerably increased the volume of the corresponding month of 1944. There was an upsurge of private contract-letting, resulting in a contract total for the year (for the 37 States east of the Mississippi river) of \$3,300,000,000 compared with \$1,994,000,000 for 1944, representing an increase of 65 percent which is the largest year-to-year percentage increase on record. Unrecorded volume of deferred maintenance and repair work is enormous in his opinion.

Mr. Holden's figures bear out his opinion that no forced-draught public works program would be needed. It is significant that, while the dollar volume of public construction contracts declined nine percent between 1944 and 1945, private construction contracts increased 255 percent. Private construction contracts, in 1944, accounted for 28 percent of the dollar total; 30 percent in the first half of 1945; and 78 percent in the last half of 1945.

Non-residential building contracts in 1945 increased 105 percent in dollar volume over 1944; residential building contracts 62 percent; and heavy engineering construction 19 percent. Dollar volume of non-residential building, because L-41 restrictions were released for industrial plant construction ahead of general removal of L-41; non-residential buildings of the larger urban types are less dependent upon scarce materials; the OPA has not exempted new rental housing from rent ceilings; and the continued threat of price ceilings on houses to be built.

It is Mr. Holden's opinion that the government measures to stimulate house-building will have the desired effect but at the expense of corresponding reductions in non-residential building. The construction industry has been able to make headway in spite of confusion and transition problems, he said, because the problems were anticipated from experiences with parallel conditions following World War I. Then, the buyers' strike, due to high construction costs, delayed the upturn five months while in this period activity has been continually increasing. Mr. Holden said that the present confusion in the construction market is entirely normal for the period immediately following a total war.

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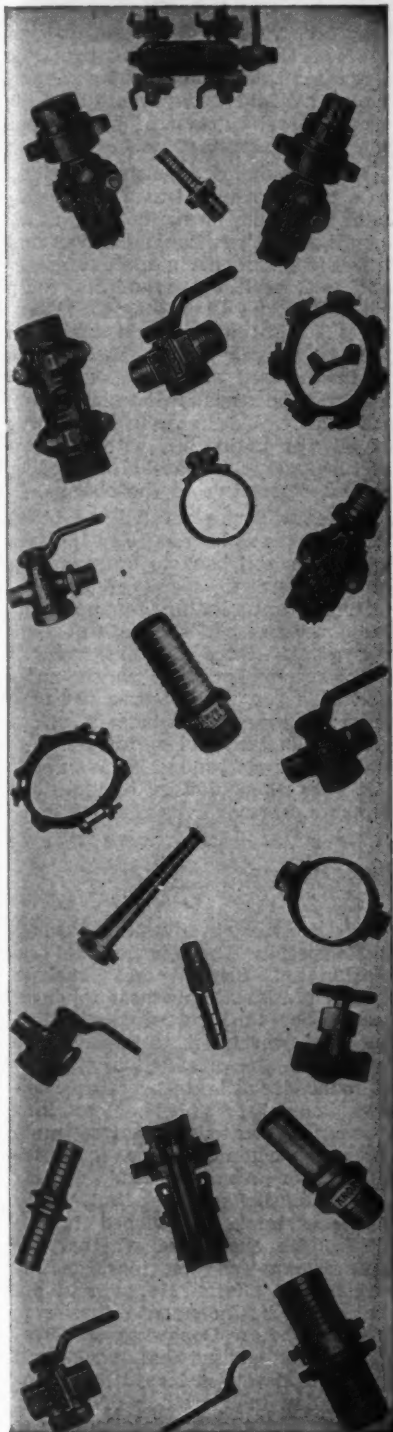
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The amount of work that can be started in 1946 is almost entirely dependent upon the volume that can be sustained by available manpower and materials, he said, in predicting a 50 percent increase in total dollar volume of contracts over 1945 which would mean a 37-states total of 4 3/4 to 5 million dollars.

Two hurdles, material prices and manpower, constitute a threat to the phase of recovery that can be counted upon to continue for an extended period, he said. An inflation crisis was reached 18 months in April, 1920, after World War I, followed by deflation and a severe decline in construction activity, but this time, he said, we did a far better job of controlling pricing during the war.

The general price level is bound to rise, in his opinion, followed by a decline and the hope is that neither level will be extreme. In October, 1945, wholesale prices of all commodities were 37 percent over the 1939 average; building materials were 31 percent up; and cement 9 1/2 percent higher.

Wage increases thus far have been moderate on an hourly rate basis. The solution to the problem of shortage of skilled construction and building labor will depend upon rapid organization of apprentice training programs, liberal union policies with respect to admitting veterans and with respect to labor-saving and time-saving methods. In respect to the latter, he said that New York papers have just reported an agreement by the electrician's union admitting the use of previously-banned labor-saving devices.

Ohio Luncheon

OHIO READY MIXED CONCRETE ASSOCIATION held its fifth annual luncheon meeting at Cincinnati during the National Ready Mixed Concrete Association meeting with an attendance of 94. Ralph Lehman of the Ohio State Highway Department outlined the bridge replacement and curve correction program in the state of Ohio. The State's portion of the federal appropriations available through the Federal Highway Act of 1944 is 20 million dollars for each of three postwar years and, with matching funds and other sources of funds the State will probably have in excess of 50 million dollars available for highway and road construction.

C. B. FRANKS, midwestern manager of the Portland Cement Association, described a system of "tilt-up" concrete construction, suggested as a solution to the housing shortage. The P.C.A. had been working for years on the development of such a system whereby mass production of fireproof homes could be accomplished.

Purchase Block Machine

SUPERIOR BLOCK Co., Charlotte, N. C., has installed a Besser Super Vi-brapac machine.

ROCK PRODUCTS, March, 1946



Avoid brittle build-ups with Coated STOODY Manganese

The Improved Electrode for manganese steel equipment!

INSUFFICIENT manganese often causes brittleness in manganese weld deposits. If rods are drawn in manufacture, manganese must be limited because of work-hardening. A slight excess of manganese makes drawing impossible. Drawn rods are therefore necessarily limited to a barely sufficient supply of manganese, with risk of weld deposits falling below the 11% minimum.



Coated Stooddy Manganese electrodes overcome skimpy manganese content. Since the electrodes are made by tightly rolling the alloying elements in mild steel tubes, a great

percentage of manganese can be included, allowing for burn-out loss with a high margin of safety. Thus, you're assured of more than the minimum alloy content to obtain desirable toughness and wear resistance.

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These Power Shovel Dipper Teeth Lead a Double Life...



Tooth costs on power shovel dipper can be substantially reduced by build-up-welding, as detailed in the above sketch. This method gives dipper teeth an extended service life at a cost less than that of new teeth.

Worn dipper teeth are quickly and economically repointed with Amsco Cast Repointer Bars, which are available in 31 sizes. Appropriate widths are torch cut from the bar, tacked on to the worn tooth, filled in, and finally hard surfaced with Amsco No. 459 or Economy Hardface.

Amsco Cast-to-Shape Dipper Tooth Repointers (another type) fit over worn teeth, are simple to apply, and are available in five styles and numerous sizes for application to practically all types and makes of dipper teeth.

Illustrations A-214 and A-214-B show dull, inefficient dipper teeth which have been repointed at small cost with Amsco Repointer Bars and a little Amsco Nickel-Manganese Steel Rod.

The service life of even new dipper teeth (See R193) is

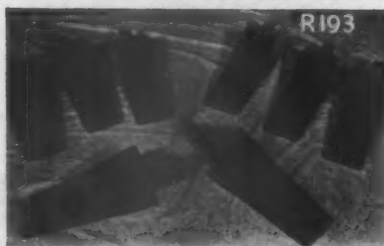
greatly lengthened by proper application of protective coatings of shock and wear resistant Amsco No. 459 Hard-Surfacing Rod or Economy Hardface.

Amsco Welding Products are also effecting important economies in the construction, mining and quarrying industries through such applications as the restoration of worn dipper lips and the reclamation and hard-surfacing of wearing parts of crushing, pulverizing and other heavy duty equipment.



Your inquiries will be welcome. For data on Amsco Dipper Teeth, write for Bulletin No. 641-S.

(Amsco Welding Products are produced and sold in Canada by Canadian Ramapo Iron Works, Inc., Niagara Falls, Ontario.)



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Agstone Meeting

(Continued from page 102)

each year for the next ten years. Where men have in the past moved to more fertile lands when the soil had become exhausted, no large scale movement is now possible, so they must revitalize the soil now in use if they are to continue to raise enough to feed the country. The professor estimated that a farmer who stopped liming his fields today would have his crop growth decrease 50 percent within the next 5 years.

Liming helps by furnishing calcium as a plant food, and as a food regulator of other elements and a soil conditioner. Even the addition of fertilizer will not bring an excessively acid soil back to the normal state without the addition of agstone. Taking a 6.5 ph value of soil acidity as the best possible state of the soil, the professor used slides to show how many of the crops react to increasing soil acidity. A decrease in the growth of all was noticeable, with the two best legumes, clover and alfalfa, being the most sensitive to the change.

Professor Truog refuted the belief that it takes as long as 10 to 15 years to bring a soil back to normal. If a farmer were to spend enough for fertilizer and liming materials he could return it to the natural state very quickly. Once the soil is brought to the recommended 6.5 ph, the addition of a ton of limestone per acre every ten years would be sufficient to keep it at that point, for he estimated that excluding leaching, the soil loses about 200 lb. of limestone per acre every year as plant food.

Luncheons

(Continued from page 73)

turned from a trip around the world. In his speech, "The International and Washington Scene," Mr. Dickson drew a pessimistic prospect for business under the present administration and warned it to expect little favor from the president in the way of reduced corporate or other business taxes before 1948. Remarking that unions can today paralyze transportation, communication and production in a minute and, quoting Walter Reuther's remark that, "every business should be turned into a T.V.A.," he questioned whether the businessman was wise in neglecting government affairs. He pointed out that some businessmen refuse even to testify before Congressional Committees, and advised that they should change to devote at least thirty minutes a day to the study of politics. "We are now the last free-enterprise government left in the world," he said, "It is up to the businessman to support the people standing for free enterprise."

A luncheon sponsored by the Manufacturers' Division was presided over by Milo Nice, Hercules Powder Co., who introduced James Stokley, Gen-

eral Electric research engineer. In his talk, entitled, "Science Remakes Our World," Mr. Stokes reviewed the progress of electrical science during the war and demonstrated such recently developed electrical equipment as the recording of sounds on a steel wire; the Berman metal locator, for locating metal in the human body; and the microwave radio, which is a basic device in radar. The wire recording demonstration was highlighted with a broadcast from a wire recording of speeches by Fred Earnshaw and G. A. Austin. In illustrating the transmission of microwaves, Mr. Stokley interrupted the direct line of the beam of microwave to prove that the waves continued transmission in spite of such interruptions. Mr. Stokley accompanied the demonstrations with a speech in which he advocated government subsidy of scientific research, but warned that it must be properly controlled so as not to become a political tool.

Chemist Corner

(Continued from page 77)

$$(2) \frac{43.0 - 41.9}{46.3 - 41.9} \times 35 = \frac{1.1 \times 35}{4.4} =$$

Using graph, Fig. 2:

(1) Move 4.4 (on B) over 3.3 (on A). Read required value (on C) above 35 (on T).

(2) Move 4.4 over 1.1. Read above 35.

Problem:

H = 77.6% CaCO_3
D = 75.3% CaCO_3
L = 71.5% CaCO_3
50 unit blend

Solution:

$$(1) \frac{2.3 \times 50}{6.1} = 18.85 \text{ units low}$$

$$(2) \frac{3.8 \times 50}{6.1} = 31.15 \text{ units high}$$

Using graph, Fig. 2:

(1) Move 6.1 (on B) over 2.3 (on A). Read (on C) above 50 (on T).

(2) Move 6.1 over 3.8. Read above 50.

Problem:

H = 3.4 C/S ratio
D = 3.1 C/S ratio
L = 2.9 C/S ratio
Correct 90 ft. of 2.9 ratio slurry with 3.5 ratio.

Solution:

$$(3) \frac{(L - D)}{(H - D)} \times 90$$

$$\frac{3.1 - 2.9}{3.4 - 3.1} \times 90 = \frac{0.2 \times 90}{0.3} = 60$$

Using graph, Fig. 2:

Move 0.3 (on B) over 0.2 (on A). Double value read (on C) above 45 (on T).

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Mechanics of Ballast

OF PARTICULAR INTEREST to suppliers of ballast materials was G. M. Magee's brief summary of the theory of track structure as developed under the auspices of the American Railway Engineering Association at the University of Illinois under the direction of the late Dr. A. N. Talbot. This informative paper was presented before the recent convention of the National Sand and Gravel Association.

Its purpose was "to place the design of railroad track on the same scientific basis as that of a building or a bridge. The earliest part of the research work was devoted largely to a study of the action of the rail in track, from which it was concluded that the rail depression and stresses could be analyzed by considering the rail as a continuous beam on an elastic support, and formulas were derived from which the stresses and depression of the rail could be calculated for known wheel loadings if the properties of the elastic support were known. The characteristics of the elastic support of the rail are to a large extent determined by the roadway and ballast. The elasticity of the rail support was called the 'Modulus of Elasticity of Rail Support' and designated as 'u' which was expressed in the number of pounds per lineal inch of rail required to depress the rail 1 inch; for example a modulus 'u' of 100 indicated a uniform load along the rail of 1000 lb. per in. of length would depress the rail one inch.

Research on Old Roadbeds

"Research in the modulus of elasticity of rail support developed two outstanding facts. First, it was found that the value of 'u' varied over a very wide range according to the degree of solidification of the roadbed and the depth and type of ballast used. On old roadbeds which had been compacted by years of traffic and where a considerable depth of crushed rock ballast had been obtained as the result of years of resurfacing, values of 'u' as high as 3000 lb. per sq. in. were not uncommon; on moderate traffic lines with a lesser depth of ballast section, and with gravel or chat ballast, a value of 'u' of 1500 to 2000 lb. was typical. On cinder ballast track of light traffic density values of 'u' of 1000 lb. were obtained. The second important finding was the variability in the modulus 'u' from tie to tie in the same piece of track and in the amount of play from tie to tie that existed between the rail, tie, and ballast bed. For example, the modulus 'u' might vary from 1500 to 3000, within a rail length. Also, within a few days time after surfacing track a play at individual ties of as much as 1/4-in. was not uncommon; since the total rail depression does not generally exceed 1/4-in. it is obvious that this amount of play results in a considerable de-

gree to non-uniformity of the rail support. We have not yet discovered practical means of overcoming this variability in modulus and track play. The use of heavy rail of increased girder strength has been of much value because of its ability to bridge over the inequalities."

Mr. Magee described other details of the University of Illinois laboratory tests to determine formulas for the distribution of pressure through ballast of different types. The analysis of test results showed the importance of the coefficient of adhesion or friction between the ballast grains or particles. It was found that the intensity of bearing pressure of ballast on the subgrade decreased as the depth of ballast increased. When the depth of ballast below the ties was equal approximately to the center to center spacing of the ties, the distribution of bearing pressure of the ballast on the subgrade approached a reasonable degree of uniformity. The addition of ballast beyond this amount would then be effective only in distributing the pressures transversely of the track.

While all this research was helpful, Mr. Magee said that trial and experience has been a far more important factor in developing ballast specifications than laboratory tests. For selecting ballast he listed the following:

"For track carrying very heavy traffic density a crushed rock or crushed slag ballast is generally preferred. For tracks of moderate traffic density, which class will include the majority of main line track in the United States, a good grade of gravel, chat, or slag ballast has been found very satisfactory. On light traffic lines an inferior grade of gravel or chat ballast or cinders is generally used.

Ballast Properties Desired

"The desirable properties in ballast are as follows:

- (1) Drain freely.
- (2) Hold the tie against movement.
- (4) Resist abrasion and disintegration.
- (4) Be easily worked.
- (5) Discourage vegetation growth.
- (6) Be free from dust.
- (7) Available at low cost.

"Specifications of the A.R.E.A. for prepared stone, slag, and gravel ballast include provisions relating to these properties. For example the ballast must be composed of "hard, strong, and durable" particles and accelerated laboratory tests are specified to determine the resistance to wear from the action of traffic and to disintegration from weathering. A low limit is placed on the amount of very fine material and clay lumps that will be accepted. This promotes drainage, freedom from dust, and cohesion between grains. Careful attention has also been given to specifying the gradation of particle size with the

(Continued on page 110)

Broad claims may be advanced for any piece of equipment, but



It's what users say that Counts!

An operator who has used Eagle Sand and Gravel Screw Type Washers for many years states: "We have used the 'Spiral Screw Washer' for 12 years without complaint. Our material, classified with this washer, passes the state specifications, and has a cleanliness test of 99½%. Operating costs are absolutely nothing compared to the efficiency and output of the Eagle Screw Washer."

A Kansas user writes: "I do not know of a deposit that has a worse clay ball condition than ours. Your washer gets the job done and our clay ball worries have been over since installing Eagle equipment."

An Illinois operator says this regarding his Eagle 18" Screw Type Gravel Washer: "This machine is giving extremely satisfactory service. We wash about 200 yards of gravel per day, and are very effectively removing chunks of blue clay and water-logged wood. We are feeding this washer with gravel which is much too small, yet it does an excellent job of cleaning."

Before installing an Eagle Screw Washer, the Waters Sand Co., Manhattan, Kans., had difficulty meeting specifications because of dirt and clay in the material they were shipping. Later they wrote: "After installation of the Eagle Washer, our sand and gravel had a finer texture. Prospective customers became actual customers. We find the upkeep comparatively small, with no expensive parts to replace."

N. C. Carroll & Sons, Pratt, Kans., reports that 500,000 yards of gravel had been washed in 16 months with its Eagle Log, and that mud ball trouble previously encountered had been totally eliminated.

For every operating condition, there is an Eagle Washer which will make good. Send for Catalog No. 44 for full information on Eagle Log Washers, Screw Washers, Shale Removers, Classifiers, Dehydrators and Special Sand and Gravel Plant Equipment.

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LOG WASHERS — DEHYDRATORS — SAND TANKS
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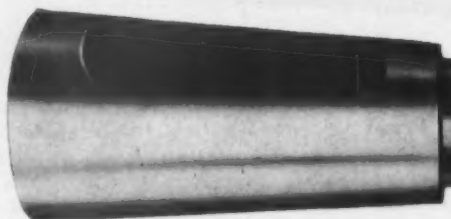
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Ballast Studies

(Continued from page 109)

purpose of providing free drainage and utmost stability."

Subgrade Treatment

Mr. Magee devoted most of the rest of his paper to subgrade treatments to avoid water pockets under the ballast. This is of considerable interest to highway engineers who are confronted with much the same problem in pavement maintenance and to portland cement manufacturers because pumping cement-sand grout into the subgrade is one of the best methods yet devised for curing or at least alleviating these troubles. Sprinkling asphalt over and into the ballast to form a seal-coat has been tried with considerable success. This keeps the surface water from leaking into the subgrade and prevents the ballast from fouling with dust and cinders, but presents a problem in tamping the ties.

Mr. Magee made it clear that drainage is the primary function of ballast, but tile drains in the subgrade below the ballast are expensive and difficult to maintain. Similarly, side rock drains are effective only so long as they can be kept clean and open.

Ballast Market

In conclusion, Mr. Magee said:

"I have discussed prospects for the purchase of ballast in 1946 with the maintenance officers of most of the railroads running out of Chicago, and the best prediction that can now be made is that the quantity of ballast used by the railways in 1946 will approximate that used in 1945. Between the years 1925 to 1930, inclusive, the railroads purchased ballast for maintenance and addition and betterment purposes of approximately 40 million dollars per year; for the 10 year period from 1931 to 1940, ballast purchases decreased to less than one-half this amount; in 1941 expenditures for ballast approximated 30 million dollars and in 1942 and 1943, approximated 40 million dollars. It is quite evident that the small quantity of ballast purchased from 1931 to 1940 inclusive, coupled with the severe demands placed upon the track structure as the result of wartime traffic, have created a considerable need for ballast materials; as a result it seems certain the railways will purchase and apply ballast to the fullest extent that operating revenues and available labor will permit.

Agstone Plant Fire

MARCELLON LIME WORKS, northeast of Portage, Wis., was almost completely destroyed by fire recently. A crusher, lime spreader truck, and Diesel-powered tractor were destroyed.

Lime Specification

NATIONAL LIME ASSOCIATION recently issued its specifications for "Lime and Its Uses in Plastering, Stucco, Unit Masonry, and Concrete." The Association points out that for many years the industry has looked to Committee C-7 of the American Society for Testing Materials for information on specifications for lime. Composed of representatives from the producers, consumers, and those generally interested in lime, the Committee has been the outstanding authority on specifications and the public has relied on its standards regularly adopted and duly published by the Society.

At present the A. S. T. M. Book of Standards contains no reference to masons hydrated lime and only a single standard for finishing lime, the so-called normal type. The last standard for hydrated lime for structural purposes was adopted in 1931. This contained standards for both normal finishing and normal masons hydrated lime but, by Committee action in 1944, the standard for normal masons hydrated lime was withdrawn. The Committee has never adopted a standard for the so-called special masons and finishing hydrated lime known as Type S. In its comments, the Association expressed the opinion that it is a reflection on the industry when structural lime is not fully represented in the standards of the Society and early action by Committee C-7 should be taken to remedy this situation.

Texas Cement Exports

A CONSIDERABLE MOVEMENT of cement is anticipated via the ports of Brownsville and Port Isabel, Texas, via water for export to foreign countries by Texas cement plants. It has been requested that a basis of freight rates be established comparable with those in effect to the other Gulf ports. The rates proposed are the domestic rates to Brownsville, also Port Isabel, with the exception from Houston and Atco, to which there is only a difference of one cent, and shipper believes that export rates to or from Port Isabel should be the same as to Brownsville on export traffic. In further justification of the application of the domestic rates on export traffic, attention has been called to the existing adjustment to the other Texas Gulf ports where the export rates are lower than the domestic rates.

Lime Convention

NATIONAL LIME ASSOCIATION has announced through President and General Manager S. Walter Stauffer that, after a lapse of three years, the association will hold a convention this year at the Homestead Hotel, Hot Springs, Va., on March 28, 29, and 30. A meeting of the Board of Directors will be held on March 27.



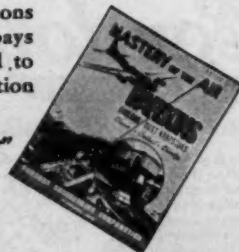
**→ IS YOUR PLANT EQUIPPED
FOR POST-WAR COMPETITION?**

*Reclaim Valuable Dust
... Increase Production*

WITH PARSONS OVAL BAG DUST

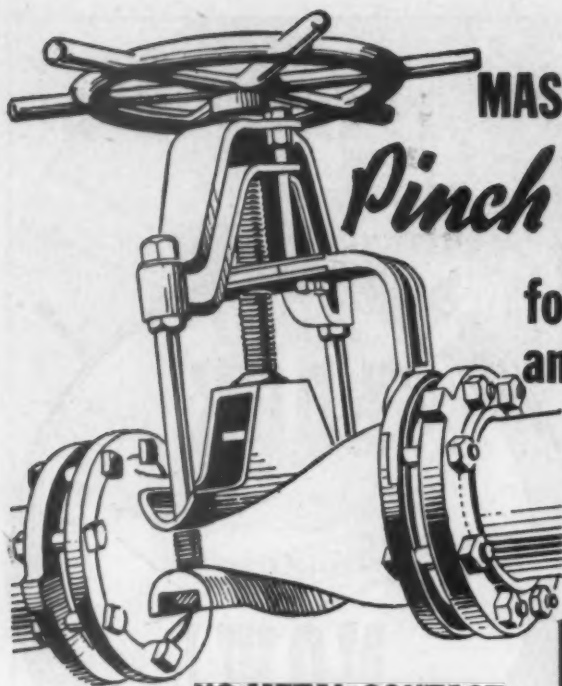
ARRESTORS ... Now is the time to give serious thought to your plant and equipment. Post-war competition will be keen, with demands for greater production, and working conditions that take into consideration the health of your employees. Dirt and dust deteriorate equipment ... slow up production ... decrease employee efficiency. This costly element can be eliminated with Parsons Oval Bag Dust Arrestors. Improved plant efficiency, plus lower maintenance cost on equipment, will prove that Parsons Dust Arresting Equipment actually pays for itself. Our engineers will be glad to make recommendations without obligation ... write today.

Write for booklet "Mastery of the Air"



Parsons CREATIVE ENGINEERS
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2545 EAST 79th ST. CLEVELAND 4, OHIO



MASSCO-GRIGSBY

Pinch VALVES

for **CORROSIVE**
and **ABRASIVE**
Pulps & Liquids

NO METAL CONTACT

Successfully used for transporting abrasive and/or corrosive pulps and liquids . . . wherever severe wear makes replacements of metal type valves too costly.

Depending upon use, the collapsible sleeve is supplied in either rubber, Neoprene or other synthetics. The valve fits tight, even on solid particles: it contains no packing glands; freezing does not destroy it.

SIZES — 1", 2" and 3" for continuous pressure to 100 lbs.; 4", 6", 8", 10" and 12", up to 150 lbs. When writing please state your specific problem.



MARCY Ball, Rod and Tube Mills; Genuine WILFLEY Tables; Rock Bit Grinders; Belt Feeders; Density Controllers

DENVER
SALT LAKE CITY
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The
Mine & Smelter
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CANADIAN
VICKERS, LTD.
MONTREAL
W. R. JUDSON
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for the Stone, Gravel and Cement Industries

Air, Steam, Water Hose
Suction Hose
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Dredge Sleeves
Cement Loading Hose
Transmission Belting

V-Belts
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Pulley Lagging
Chute Lining
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Slings
Packing
Molded Products
Abrasive Cutting and
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It Pays You to Put Manhattan on the Job

RAYBESTOS-MANHATTAN, INC.

MANHATTAN RUBBER DIVISION
FABRICATING DIVISIONS AND FACTORIES: PASCADY, NEW JERSEY

Read

"Operating

Trends"

in

this issue

FINANCIAL

RECENT DIVIDENDS

Canada Cement Co., Ltd., 6½% pfd. (arrear).....	\$1.625	Mar. 20
Lehigh Portland Cement Co.25	Feb. 1
Pacific Portland Cement Co. 6½% pfd. (p100) (arrear)	1.00	Jan. 29
Raymond Concrete Pipe Co. Com. (np) ext.25	Feb. 1
Riverside Cement Co. 1st pfd.	1.25	Feb. 1

CONSUMERS Co., Chicago, Ill., has set aside \$500,000 to purchase outstanding shares of the company's preferred stock. The Board of Directors has announced that no tender in excess of \$50 per share will be considered. There are now outstanding 70,755 shares of the \$50 par, \$3 annual dividend, issue. Stock is callable at \$57.50 a share, plus accumulated dividends which amounted to \$5.34 per share as of December 31, 1945.

CANADA CEMENT CO., LTD., Montreal, Canada, reports through President J. D. Johnson that business in 1946 will equal, if not exceed, the volume in 1945. A \$3,300,000 improvement program is under way. Income account for the years ended November 30, is as follows:

	1945	1944
Operating profit	\$5,018,302	\$3,816,878
Depreciation	1,615,000	1,625,000
Directors' fees, etc.	103,552	103,591
Balance	3,299,750	2,088,087
Inc. from investm'ts	72,473	69,298
Total income	3,372,223	2,157,385
Bond interest, net.	372,740	405,255
Mortgage interest	15,300	17,300
Pension fund	100,000	100,000
Bond refunding exp.	110,000	110,000
Bond redemp. exp.	9,037	33,715
Inc. & profits tax.	11,685,000	663,000
Net income	1,080,146	828,116
Preference dividends	1,004,345	1,004,345
Surplus for year.	75,801	176,229
Previous surplus	3,409,280	3,585,509
Surplus, 11-30	3,485,081	3,409,280
†Times chg. earn.	6.55	3.80
Earn., pref. share.	\$5.38	\$4.12
*Earn., com. share.	d 0.38	d 0.80
No. of pref. shares.	200,869	200,869
No. of com. shares.	600,000	600,000

*Disregarding preferred arrears.
†Before income and profits taxes.
‡Before deducting \$171,000 refundable portion of excess profits tax.

NEW HAVEN TRAP ROCK CO., New Haven, Conn., recently presented the following balance sheet as of November 30, including the Branford Steam Railroad Co.:

Assets:	1945	1944
Cash	6,752	\$ 19,088
Accounts receivable.	108,547	93,559
Tax claim	20,065
Crushed stone	48,924	69,660
Supplies	36,128	24,360
Prepayments	20,947	6,872
Total current	\$ 241,363	\$ 213,547
Plant and prop.	3,336,537	3,292,540
Investments	21,619	22,909
Suspense	600	6,866
Total	\$3,600,119	\$3,535,861
Liabilities:		
Accounts payable	44,197	\$ 41,376
Mortgage payable	28,200	3,500

Notes payable	105,000	50,000
Taxes payable	3,183	3,092
Income taxes	11,649	89

Total current	\$ 192,209	\$ 98,057
Depreciation reserve	671,951	646,994
Depletion reserve ..	31,936	30,536
Contingency reserve ..	22,790	27,849
Pfd. stock (\$100)....	1,664,000	1,664,000
Common stock (\$50)	1,040,800	1,040,500
Surplus	d 23,368	27,925

Total	\$3,600,119	\$3,535,861
Net current assets..	\$49,154	\$115,490

GIANT PORTLAND CEMENT Co., Philadelphia, Penn., reported income for the years ended December 31 as follows:

	1945	1944
Net sales	\$1,220,020	\$735,480
Cost of sales	954,881	571,149
Selling, etc., expense	215,649	201,031
Depreciation and depletion	42,750	43,427
Operating profit ...	8,740	d 80,127
Other income, net..	10,402	12,208
Total income	19,142	d 92,335
Income taxes	4,500
*Prior years inc. tax cr	28,759	cr 8,854
Net income	43,401	d 99,085
Earn. deficit, 1-1...	76,412	17,347
Earn. deficit, 12-31.	39,011	76,412
Earned per share...	\$0.15	d \$0.21
No. of shares.....	282,453	282,453

*Refund of Federal and state income taxes under loss carry-back provision, and in 1944 recovery of prior years Federal and state income taxes, etc.; included in net income below.

MINNESOTA MINING & MANUFACTURING Co., St. Paul, Minn., has announced the appointment of National City Bank and Guaranty Trust Co., both of New York City, as registrar and transfer agent, respectively, for no par common stock which recently has been admitted to dealings on the New York Stock Exchange.

LONE STAR CEMENT CORPORATION, New York, N. Y., presented the following consolidated statement of earnings for the year ended December 31:

	1945	1944
Sales	\$31,153,758	\$27,966,013
Mfg., etc., costs...	21,269,235	18,883,894
Selling exp., etc..	3,070,587	2,785,833
Deprec. & deplet.	1,820,101	1,904,374
Operating profit ..	4,993,835	4,391,912
Other income ...	590,249	426,575
Total income ...	5,584,084	4,818,487
*Res. for taxes...	2,349,100	2,266,284
*Misc. charges ...	533,289	496,947
Net profit	2,701,695	2,055,256
Earned per share.	\$2.85	\$2.17
No. of shares.....	948,597	948,597

*Includes provisions for doubtful accounts and contingencies.

†No provision for excess profits tax necessary.

Note: Results of foreign subsidiaries included above are figured at average exchange rates, except as to provision for depreciation and depletion which is based on the dollar value of fixed assets at time of acquisition.

Postpone Convention

THE CAST STONE INSTITUTE has announced that the convention, originally scheduled for March 11 and 12, has been postponed. Herman Frauenfelder, managing director, advises that the new dates and place of convention will be determined by the Board at its next meeting.

SPEAKING of RESULTS!

Beach Rock Co.
California

Buffalo Slag Co.
New York

Standard Lime & Stone Co.
West Virginia

Permanente Corp.
California

Genesee Sand & Gravel Co.
New York

The Sowerbutt Quarries
New Jersey

Buffalo Crushed Stone Corp.
New York

Ripplemead Lime Co.
Virginia

Ward & Montgomery
Kentucky

New York Trap Rock Corp.
New York

Duquesne Slag Products Co.
Pennsylvania

Ralph Rogers Co.
Indiana

Warner Co.
Pennsylvania

Bituminous Products, Inc.
New York

Industrial Silica Corp.
Pennsylvania

New Haven Trap Rock Co.
Connecticut

Spratlen-Brannan, Inc.
Colorado

Lee Lime Corp.
Massachusetts

The Dow Chemical Co.
Michigan

B. V. Hedrick Gravel & Sand Co.
North Carolina

Blue Ridge Stone Co.
Virginia

Parker Sherman Co. & Easton & Smith
Washington

J. S. Risley
Oregon

Carbon Limestone Co.
Ohio

John P. Condon Corp.
Massachusetts

Pembroke Limestone Corp.
Virginia

Kelley Island Lime & Transport Co.
Ohio

Suburban Construction Co.
Pennsylvania

Clifford A. Dunn
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Morrison-Knudsen Co.
Idaho

Samuel Brann's Sons
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Screen Equipment Company, Inc.
9 Lafayette Avenue, Buffalo 13, New York

The NEW LEADER leads the field again

New design • All Steel • Longer life spreader



Check all these features and compare them with any spreader on the market today.

- Gear boxes driving distributor discs are equipped with steel-cut gears and ball bearings running in dust proof and oil tight gear cases. Large gear box driving wide bottom chain conveyor is equipped with a steel ring gear and pinion. A thrust ball bearing, also running in a dust proof and oil tight gear case.
- New style conveyor is 24 inches wide.
- Extra heavy duty pintle type conveyor chain is used.
- Feed gate which determines thickness of spread now controlled by a lever easily reached from cab of truck.
- Check and compare size of shafting, thickness of distributor discs, size of roller chain, heavier plate chain.
- Most important! Notice slope of spreader box.

• With this new style, extra-wide bottom spreader you will be able to handle all types of lime, either wet or dry, and even marl—which is usually extremely wet.

No vibrator is required and no one is needed to push down the wet lime. All you do is adjust the feed gate to the number of tons desired per acre and The NEW LEADER takes care of the rest.

Easy maintenance. . . . Rugged construction. . . . More profit . . . when you own and operate THE NEW LEADER SPREADER.

Write for prices, delivery and dealer in your territory. Some territories still open for dealers.

HIGHWAY EQUIPMENT COMPANY, INC.

Cedar Rapids, Iowa, U. S. A.

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Manufacturers of the world's most complete line of spreaders.

NOTICE: Spreaders also available in all steel frame, except hopper or spreader box of wood. Both sides and front end and back out of wood instead of steel.

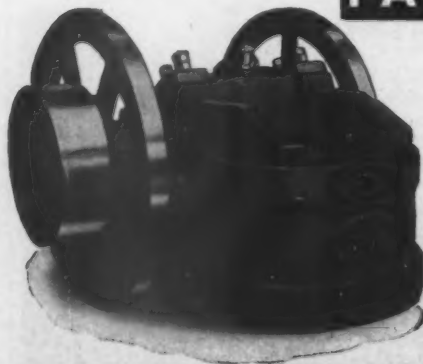
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CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

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ANSONIA, CONN.



Foreign Cement

BUREAU OF MINES recently published information on the production of building materials during the war years in various foreign countries.

Cement production in France has been far below the prewar level. Officials had estimated that over 2,000,000 metric tons of cement would be needed in 1945 to satisfy the most urgent needs of the country. While no official estimate of the total 1945 production has been made, it is believed that it was less than half that amount. During the first quarter of last year the output averaged about 83,800 metric tons a month, and this increased to 115,000 tons a month during the second quarter. These figures are 30 to 40 percent of the peacetime production over similar periods in prewar 1938. Total production in that year was about 4,000,000 tons.

This is contrasted with the latest available yearly total of 2,560,000 tons in 1943. At the time of the occupation, the Germans took about 90 percent of the northern and later, about 60 percent of the southern cement production for construction of the Atlantic Wall, airports, and other military operations. German demands were principally for high-grade cement so that the greatest part of the remaining stock is low-grade. Production of lime also lagged behind prewar totals, the 1944 production averaging 83,000 tons monthly and the 1945 output varying from 38,700 to 90,200 tons monthly. Decreased production of these materials is attributed more to the lack of coal and to the scarcity of labor and transportation facilities than to the wartime destruction of production facilities. The Central Office of Distribution of Industrial Products estimates that the capacity of plants producing building materials is at least 90 percent of the prewar capacity.

Production in Germany

Figures on production in Germany show an output of 5,000,000 metric tons during the first five months of 1944. Total output for 1943 was 12,400,000 metric tons, an estimated 48 percent of available capacity. Some German cement producers in 1944 were advocating expanding the industry by about 40 percent after the war. The plans were based on a post-war construction program of 1,000,000 dwelling units per year for Germany, and 1,000,000 to 5,000,000 such units a year for the rest of Europe. In their argument they claimed that prewar plants had been used up to capacity, and German production was only 212 kilometers per head of population, as against 284 in the United States.

Spanish cement sales for 1944 totaled 1,521,323 metric tons, a slight increase over the 1943 production of 1,492,708 tons. No additional plants were built in 1944, principally because of lack of equipment.

Cement production in Ecuador

reached 77,421,000 lb. in 1944, and was estimated as sufficient to supply domestic requirements. Producers were planning on marketing a 1945 surplus in Columbia and Peru.

Lime Association's Divisions

THE NATIONAL LIME ASSOCIATION, Washington, D. C., has mailed a letter to all member companies announcing the new divisional set-up of the association authorized by the board of directors at the last meeting. Members were asked to select the division with which they desired to affiliate. The three divisions and their temporary chairmen are as follows: Operating, Russell Rarey, vice-president, Marble Cliff Quarries Co., Columbus, Ohio; Finishing Lime, Ralph L. Dickey, president, Kelley Island Lime and Transport Co., Cleveland, Ohio; and Agricultural Lime, H. D. Brigstocke, vice-president, Thomasville Stone and Lime Co., Thomasville, Penn.

Milling Asbestos

A 16-PAGE BOOKLET, "Milling Asbestos," describing the steps involved in obtaining asbestos fibre from the ore, has been reprinted from recent issues of "Asbestos" magazine. It describes the production of Chrysotile fibre, as an example, and follows the process through the complex series of crushings and screenings in a typical plant. Various methods of cleaning and grading the fibres are discussed, and the article closes with a summary of the uses of specific grades of the fibre. The author is J. C. Kelleher, Manager of Asbestos Fibre Distributors, Division of Johns-Manville Sales Corp., and the article is written as a companion to "Asbestos Mining Methods," published last year in reprint form.

Explosives

MINERAL INDUSTRY SURVEYS department of the Bureau of Mines has published statistics on the consumption of industrial explosives in 1944. A total of 512,900 lb. of permissible explosives was sold for use in quarrying and non-metallic mineral mining during that year. Of this, 48,623 lb. were used in the form of granular black blasting powder, and 14,932 lb. in the form of pellet black blasting powder. Texas was the greatest consumer in this field, its use of 211,400 lb. being almost half the total used.

Buy Dolomite Products

ODENBACH SHIPBUILDING CORPORATION has made arrangements to purchase from the R.F.C. the shipbuilding plant at 4800 Dewey avenue, Rochester, N. Y. The Odenbach interests also will purchase the government-owned Dolomite Products plant on Buffalo Road.

For Better All-Around Performance on Heavy Cement Slurries



Specify

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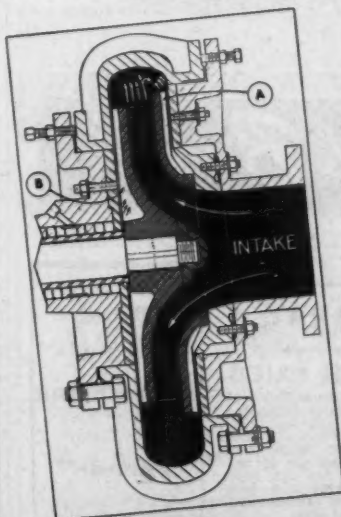
"TYPE S"

Centrifugal

the pump that combines ideal hydraulic theory with everyday practice

● When it comes to moving cement slurries the efficient way, you need a pump that operates smoothly . . . that requires a minimum of attention . . . and that works day-in-day-out without maintenance trouble, time or expense. *Reliability comes first!* That's why MORRIS "Type S" Centrifugal Slurry Pumps are *designed primarily to give you reliability* . . . plus as high a degree of theoretical efficiency as is consistent with high reliability.

MORRIS Advanced Impeller Design Insures Long Wear



External ribs of longer diameter on the suction side of the Morris impeller—an exclusive feature—set up a higher localized pressure than exists in the pump shell (see A in diagram), reducing recirculation of abrasive solids between the impeller and the suction disc, thereby cutting down wear, eddy losses and leakage.

Other vanes on the opposite side of the impeller (see B in diagram), create a flow away from the stuffing box, reducing the pressure at that point and substantially increasing the life of the packing.

Let our engineers consult with you on your slurry pump problems. They'll give you the benefit of 81 years of pump-building experience. No charge. No obligation. Write for Bulletin No. 173.

MORRIS MACHINE WORKS
BALDWINVILLE, N. Y.
Sales Offices in Principal Cities

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CENTRIFUGAL PUMPS



"A DANDY PLANT— WE ARE WELL SATISFIED"

Shown here is the Hetherington & Berner Asphalt Plant of the Towland Construction Co. Ltd., of London, Ont. J. S. Mitchell, general manager, says: "It's a dandy plant—we are well satisfied."

H & B ASPHALT PLANTS

— FOR TIME-SAVING, COST-CUTTING PRODUCTION



Modernize your old plant by installing FLUIDOMETER, the automatic asphalt metering system. Saves time, materials, insures accuracy and uniformity. For all types of plants. Write for Bulletin F-44.

● A satisfied owner is the best advertisement any equipment can have. Hetherington & Berner asphalt plants have many such advertisements—in all parts of the U. S. and in Canada. For over 75 years these plants have been satisfying their owners by giving dependable, economical production, with low maintenance costs.

America's first builders of asphalt mixing equipment, H & B today offer the very latest improvements and refinements in design in both portable and stationary plants of all types and capacities—from the smallest patch plants to the largest stationary models.

Get ready now for the busy years ahead. Write for literature on the type of plant in which you are interested.

HETHERINGTON & BERNER INC.
745 Kentucky Avenue • Indianapolis 7, Indiana

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ARMSTRONG-BRAY



GEAR AND WHEEL PULLERS

Essential Tools Prompt Shipment
because they save hours of time, prevent costly breakage and long shut downs.
STEELGRIP Standard Rigid Arm Gear and Wheel Pullers are of improved design. Will not slip from work. Arms are forged and heat treated. 3-arm, 2-arm and special designs. 34 types and sizes.
CELANGRIP Universal Pullers pull wheels, solid gears, pinions, etc., even at considerable distance from end of shaft.
Proof-tested chains have both chain hooks and special pulley hooks. 3-ton and 12-ton capacities.

Write for Catalog Sheets
ARMSTRONG-BRAY & CO.
"The Belt Lacing People"
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Chicago 30, U. S. A.

Read

"Operating

Trends"

in

this issue

Brazilian Cement Output

CEMENT production in Brazil increased year by year up to 1941 when 767,506 metric tons were produced. After that year production was decreased up to 1944 owing to the difficulties in importing fuel oil. Charcoal was used in part to substitute for fuel oil, but Brazil has been obliged to import some foreign cement during the past several years to meet local consumption. Due to improvement in importation of fuel oil during 1944, the production of cement increased to 809,908 metric tons and attained 374,812 tons in the first six months of 1945.

Cement Carload Weights

RAILROADS propose to increase tariff minimum weights on cement as follows in Southwestern territory: When in box cars, 60,000 lbs.; when in covered hopper cars, the marked capacity of the car used. Under O.D.T. Order No. 18, the present loading is not less than 60,000 lbs., and it is the general belief this loading can be preserved for the future. A similar proposition is being submitted in other territories.

Buy Phosphate Lands

INTERNATIONAL MINERALS & CHEMICAL CORPORATION, Chicago, Ill., has purchased a phosphate deposit near Bartow, Fla., comprising about 2000 acres. Rock will be shipped from Bartow by rail to Mulberry, Fla., center of present activities, where it will be dried, graded, stored and shipped to manufacturing outlets.

Mexico Buys Lime Plant Equipment

INDUSTRIAL CALERA DE HUESCALAPA, Guadalajara, Jalisco, Mexico has purchased a Kuntz gravity system of lime hydration. According to Lime & Hydrate Plants Co., this plant will produce 85 tons of lime per day, and make all types and grades of hydrated lime.

Plan Block Production

PAK-CRETE BLOCK CO., Kewanee, Ill., has started production of concrete block. The new enterprise is owned by Leo Verschage, recently discharged from the service, and Julius Neirynck.

Install Diesel Locomotive

THE WARNER CO., Philadelphia, Penn., has placed in operation a new 100-ton, 660 hp. Baldwin-Westinghouse Diesel-electric locomotive at the Van Sciver sand and gravel plant.

Sell Business

THE LEESBURG LIME & FUEL CORPORATION, Leesburg, Va., has sold its business to Robert J. Wieland who will continue to operate under the old name.

Poured Concrete House

R. G. LeTOURNEAU, INC., Peoria, Ill., has developed a process for constructing a house by means of a single pour of concrete. The house, four rooms and a bath, is erected by pouring concrete into a mold. Concrete is poured over heating pipes previously installed so that heat is radiated from the floors and walls. Only the molds will be made by the company which will be sold or rented to contractors. The cost of the house is estimated at \$4,000.

Install Block Machine

WRIGHT BROS., Gastonia, N. C., is building a new plant, and will install a new Stearns Joltcrete No. 7 block machine. The building will be 30- x 90-ft. with five curing rooms 7- x 7½- x 37-ft.

Phosphate in Morocco

REPORTS from French Morocco, Africa, show that output of phosphate rock continues below anticipated monthly production. Shortage of electric power has restricted excavation, drying and transport operations.

Make Block

ELMER D. CLARY and C. E. PRICE have organized a company to produce 1700 concrete block a day in a new \$55,000 plant at Richfield, Calif. They plan to install concrete shingle and pipe machines later.

Make Poultry Grits

PURE GRANITE Co., Dallas, Texas, has set up a plant at the old Capital Quarry near Troy, Okla., which will produce several sizes of poultry grits from granite. Concrete blocks also will be made from crushed granite aggregate.

Form Aggregates Concern

ARLINGTON SAND & GRAVEL Co., Arlington, Wash., is now constructing a new plant for the production of aggregates and ready-mix concrete. The company was formed by V. M. Lee and Lyle Smith, Everett, Wash., and E. R. Johnson, Marysville, Wash.

Start Block Concern

FRANK COLTON and DARREL STONE have started manufacture of concrete blocks in Colorado Springs, Colo., under the name of S & C Enterprises. The plant is at 1331 S. Nevada avenue.

Expand Into Ready Mix

ROBERT M. MARTINDALE of Middletown, Ohio, recently purchased the sand and gravel business operated by Blair and LeRoy Co., at Franklin, Ohio. It is Mr. Martindale's plan to later go into the ready mixed concrete and concrete block manufacturing business.

Wash SPECIAL Industrial Sands this more reliable, less costly way

WHEN equipped with wash boxes and lifters on the spirals, the AKINS Classifier becomes an efficient washer for producing special industrial sands to exacting specifications . . . such as required for foundry moulding and glass making.

No elaborate arrangements required. Unloading unnecessary to start after shutdown; power requirements very low; maintenance almost nothing. Let one of our engineers present the facts in detail.

● Lowden Dryers, Skinner Multiple Hearth Roasters, Heavy Media Separators and Densifiers.



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Each ROCK PRODUCTS will help you solve your production and marketing problems. Each issue has as regular features "Operating Trends," "Hints & Helps," "Rocky's Notes," "News of the Industry" in addition many important articles about successful Rock Products plants.

12 beautiful issues, \$2 . . . or 2 years, \$3

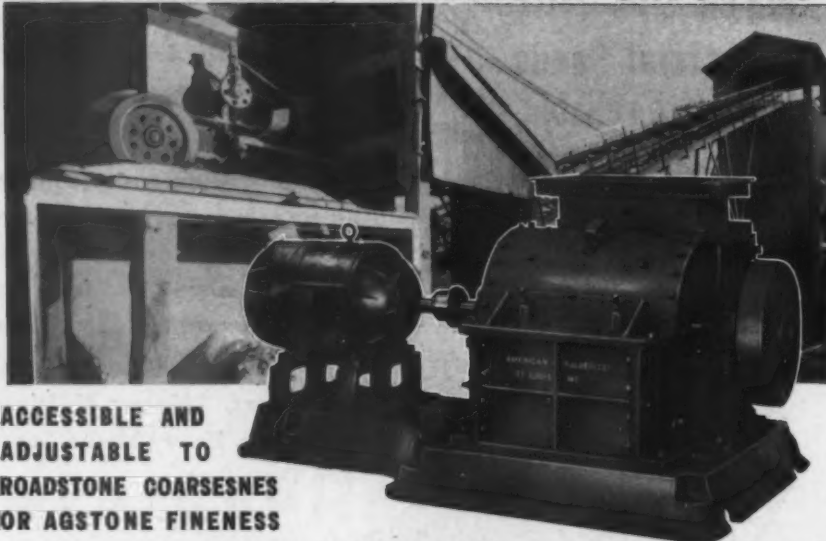
Mail handy subscription card in this issue.

. . . No postage needed. . . Act now°

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PRODUCTS**

FOR FLEXIBILITY—AMERICAN CRUSHERS



**ACCESSIBLE AND
ADJUSTABLE TO
ROADSTONE COARSENESSES
OR AGSTONE FINENESS**

Americans offer custom-built models to best fit your particular operation and type of stone in your quarry. High tonnages in the one-step or circuit operations. Resistant to clogging. Capacities up to 250 TPH.

Ask any of the many who operate Americans.

Send for bulletin on Rock Crushing Data.

American PULVERIZER COMPANY
Originators and Manufacturers of
Ring Crushers and Pulverizers

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ST. LOUIS 10, MO.**

**Want MORE
OUTPUT?
With LESS
LABOR?**

**Solve Your EXCAVATION
and STOCKPIILING JOBS
with 1 MAN and a
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**Cableway Feeds Large Plant
from Deep Pit**

Above picture shows a Sauerman Cableway mining a gravel deposit 90 ft. deep and 1,000 ft. wide and moving the material to a hopper on top of screening plant at rate of 900 cu. yd. a day. Operating cost is only a few cents a yard.

New Incorporations

Concrete Products, Ltd., Myrtle Beach, S. C., has been organized as a limited partnership between N. C. Hughes of Myrtle Beach, and Colonel John P. Wall and G. H. Franke of Camden, S. C.

Iowa Concrete Products Corp., Coralville, Iowa, has been incorporated with a capital stock of \$10,000 divided into 100 shares of \$100 each. Incorporators are Mary E. Slaymaker, John E. Griffin, and H. Dale Slaymaker.

Soo Gravel Co., Sault Ste. Marie, Mich., has filed articles of incorporation, with a capitalization of \$100,000 in common stock. Ford Beacon, Pickford, Mich., is the incorporator.

Lefler Cement Block Co., Charlotte, N. C., has been organized to deal generally in concrete products; authorized capital stock, \$25,000; subscribed stock, \$6,000 by George F. Lefler, Roberta B. Lefler, Paul Fligel, and Helen Fligel, all of Charlotte.

Standard Slag & Stone Co., Portsmouth, Ohio, has been incorporated by R. M. Grimsley, W. E. Covington and J. W. McKenzie.

Arlington Sand & Gravel Co., Arlington, Wash., has filed articles of incorporation with capital stock of \$25,000 divided into 250 shares of common stock with par value of \$100 each. Capital with which corporation will begin business is \$10,000. Incorporators are P. T. Lee, V. M. Lee, E. R. Johnson of Marysville and Lyle Smith. Place of business is Olympia and First Sts., Arlington.

Kokomo Cement Products Co., Kokomo, Ind., has been organized with 3000 shares of stock. Directors and incorporators are Glen E. Naphew, Kokomo, Route 3; Charles R. Bevan, 225 Kingston Rd., and Hubert B. Layne, 305 East Boulevard.

Maumee Stone Co., Toledo, Ohio, has received incorporation papers with a capital of 1000 shares of stock, no par value, and \$100,000. Incorporators are J. J. Kendrick, G. C. Scharfy and A. C. Ehrenfried.

Wisconsin Lannon Stone Corp., Menomonee, Wis., has been organized to mine, quarry and prepare for market limestone and other stones and minerals, etc. Authorized capital, 500 shares of common stock at \$100 per share. Incorporators are Scott Lowry, Evelyn W. Yatzek and Helen McCauley.

Kolinski Concrete Co., Milwaukee, Wis., has increased stock from 1000 shares, no par value, to 2000 shares, no par value.

Arizona Concrete Pipe Co., Phoenix, Ariz., has filed articles of incorporation to engage in the business of manufacturing concrete pipe and other types of construction supplies and materials, with a capital stock of \$250,000. Incorporators are Newell S., Ralph V., and James M. Shumway.

Manufacturers' News

Worthington Pump & Mach. Corp., Harrison, N. J., announces that Floyd S. Adams has joined the sales staff of the construction equipment division and will cover Texas and Oklahoma under Harry J. Schultz, manager of the Central Region, Chicago, Ill.

International Harvester Co., Chicago, Ill., has announced the establishment of a Pacific Coast motor truck manufacturing plant at Emeryville, Calif., in the San Francisco Bay area. Adolph W. Engstrom will be works manager; Robert Ulrich, chief engineer; F. C. Miller, auditor; E. H. Bickell, material controller; E. C. Becker, buyer; H. E. Straub, general foreman; H. W. Timm, service engineer, and A. S. Busselle, parts manager.

Kropp Forge Co., Chicago, Ill., has announced the election of Raymond T. O'Keefe, Jr., as vice-president and special assistant to Roy A. Kropp, president of the company. Mr. O'Keefe has been associated with the company since 1942 when he was appointed personnel manager.

American Brake Shoe Co., Chicago Heights, Ill., has appointed Joseph B. Terbell as executive vice-president of the American Manganese Steel Division. Mr. Terbell has been affiliated with various divisions of the company in sales and executive capacities since 1928.

New Holland Machine Co., New Holland, Penn., announces that Louis W. Woolfolk has joined the engineering

staff of the industrial division as sales engineer. A graduate of Northwestern University, he was first associated with the Inland Steel Co. for a short time, later joining the Shell Oil Co.'s foreign engineering department. His work as geophysicist in Venezuela and his travels in other South American



Louis W. Woolfolk

countries were terminated by the beginning of the war. He later became associated with the Universal Engineering Corp., Cedar Rapids, Iowa, and was assistant chief engineer of the road machinery division at the time of his transfer to New Holland. Mr. Woolfolk is well known to the stone quarry industry for his work in stone crushing equipment design. He has had extensive experience in gravel, stone and lime plant installations.

Worthington Pump & Machinery Corp., Harrison, N. J., announces that James C. Barnaby, consulting engineer, has been transferred to the general engineering staff at the Harrison works as assistant director of research and development.

National Truck Leasing System, Chicago, Ill., has moved to larger quarters at 111 W. Jackson Blvd. Charles P. Clark is president and Martha Dunlap is executive secretary.

Mack Mfg. Corp., New York, N. Y., has announced the election of W. M. Walworth as vice-president and chief engineer. Mr. Walworth has been acting chief engineer since March, 1945. He joined the company in 1939, after 12 years in the engineering department of Reo Motors, Inc., Lansing, Mich. He entered the automotive field immediately after graduation from Massachusetts Institute of Technology in the class of 1926. Assigned first to the Allentown, Penn., plant, he was soon moved to the New Brunswick, N. J., plant where he remained as executive engineer until his appointment as acting chief engineer. His headquarters will continue to be in the company's general offices in New York City.



W. M. Walworth

Caterpillar Tractor Co., Peoria, Ill., announces the appointment of R. R. Robinson as assistant chief engineer in charge of engine design. Mr. Robinson has been with the company since 1934.

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., has expanded the Pittsburgh branch to include a large portion of Ohio, the eastern panhandle of West Virginia and several northern counties of Maryland. This will now be called the Central district, with headquarters in

"PENNSYLVANIA"



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Pittsburgh, Penn. R. C. Rice is manager and J. B. Anderson has been appointed assistant manager. Mr. Anderson, who formerly represented the company in southern and western Pennsylvania, succeeds the late Stanley J. Waechter. Joseph Hoffman will represent the company in southern Pennsylvania and northern West Virginia.

Paulsen-Webber Cordage Co., New York, N. Y., announces that it has increased its services to include warehouse stocks in the Boston and Baltimore offices for immediate delivery. Charles Olivier is manager of the Boston office which is located at 131 State St., and Richard Kehoe is manager of the Baltimore office at 1101 Munsey Building.

Timken Roller Bearing Co., Canton, Ohio, has named Fred Reiser, Jr., as division manager for all divisions of the company in the Cincinnati district. He has been Cincinnati district manager for the industrial division since 1944, and has been with the company since 1933. Harry McCool, who joined the company in 1928 as a hot mill operator, has been appointed sales engineer for the steel and tube division in the Cincinnati district, which includes Indiana, Kentucky and part of Ohio.

Jaeger-Lembo Machine Corp., Corona, L. I., N. Y., announces that Frank H. Lembo has been appointed vice-president and general manager of the New Jersey territory. Major Joseph A. Thomas, recently connected with the U. S. Army Ordnance Department and formerly with the Jaeger Machine Co. as sales engineer, will be associated with Mr. Lembo.

American Brake Shoe Co., Chicago Heights, Ill., has appointed Irving F. Wagner as vice-president of the Kellogg division. He was formerly manager of the Kellogg plant at Rochester, N. Y. Mr. Wagner has been associated with the company since 1923.

Whiting Corp., Harvey, Ill., announces that C. Q. Wright, who was vice-president

in charge of sales before he joined the U. S. Navy as a submarine commander in World War II, has returned to the company in the capacity of vice-president dealing with special staff work. Capt. Wright saw action in Saipan, Guam and other points in the Pacific and also was in charge of building the submarine base on Guam. He was commanding officer of the Sub Tender "Holland" for the last year and a half, repairing and refitting submarines, and finally brought her anchor in Tokyo Bay.

Lima Locomotive Works, Inc., Lima, Ohio, has appointed Edward E. Worrell as assistant district manager of the central district. Mr. Worrell joined the organization through its subsidiary predecessor, the Ohio Power Shovel Co., in 1929, and has been actively serving the same territory as service engineer and sales representative during the past 18 years.

Blaw-Knox Division of Blaw-Knox Co., Pittsburgh, Penn., announces the appointment of R. P. McKenrick as manager of construction equipment. A native of Pennsylvania, Mr. McKenrick has for ten years been in charge of construction equipment sales in the mid-western states comprising the Chicago territory. He has a background of actual construction experience, gained during his seven years with the



R. P. McKenrick Pennsylvania Highway Department. During the war he was project manager in charge of construction of the huge synthetic rubber plant built by the company for the B. F. Goodrich Co., Louisville, Ky.

Union Wire Rope Corp., Kansas City, Mo., announces that Ray G. Noble has returned to his old duties as advertising manager after three years service with the U. S. Army. Mr. Noble had been with the company five years before his entrance into the Army.

Bemis Bro. Bag Co., St. Louis, Mo., has announced that F. W. Ayers has been transferred from the Peoria, Ill., plant to the Bemis plant at San Francisco, Calif., where he will carry on sales promotion work on multiwall paper bags.

General Electric Co., Schenectady, N. Y., has announced the appointment of J. W. Brauns as manager of the industrial haulage division. He succeeds F. H. Craton who is now assistant manager of the transportation divisions.

Hercules Powder Co., Wilmington, Del., announces the retirement of W. T. Ayer of the engineering department after 27 years of service with the company. Since he joined the company in 1918, Mr. Ayer has been responsible for many design improvements in the explosives and other industries. Chief among these is the Ayer shell machine, which makes and prints the cartridges in which dynamite is packed. Originally associated with the engineering department's maintenance division, Mr. Ayer later went to the Kenvil, N. J., plant where he worked on machinery used in smokeless powder and dynamite manufacture. From 1919 to 1922, he was in charge of the design division of the department, which was followed by work in special fields.

Athey Products Corp., Chicago, Ill., has appointed E. T. Tuller as domestic sales manager. He will work closely with D. F. Hipkind, vice-president in charge of sales. Mr. Tuller has been with the company since 1940.

Chase Bag Co., New York, N. Y., will celebrate its one hundredth anniversary with the erection of a new plant in St. Louis, Mo. The one-floor, brick and concrete building will have a floor space of 100,000 sq. ft. and will have a mezzanine office of 15,000 sq. ft.



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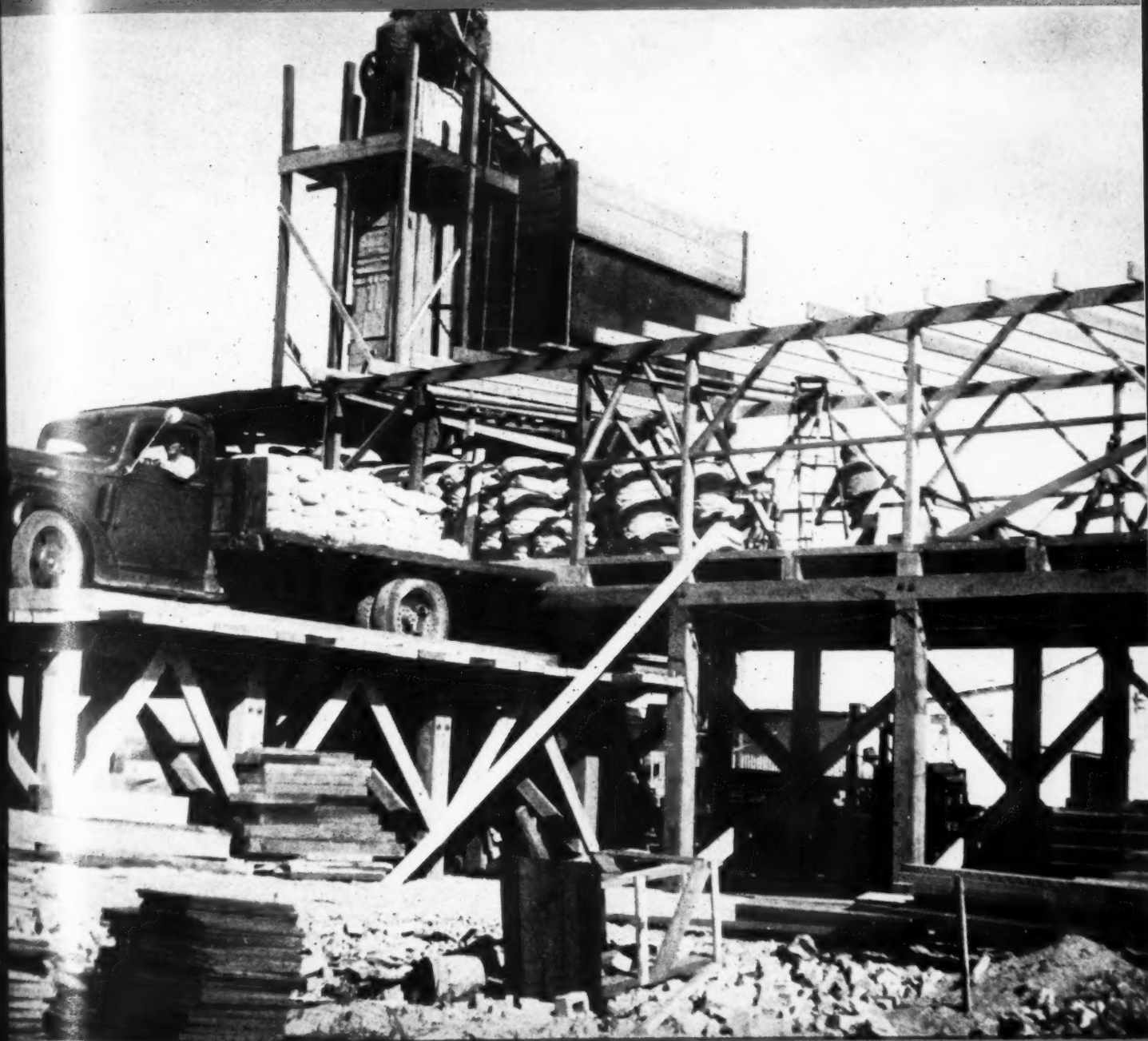
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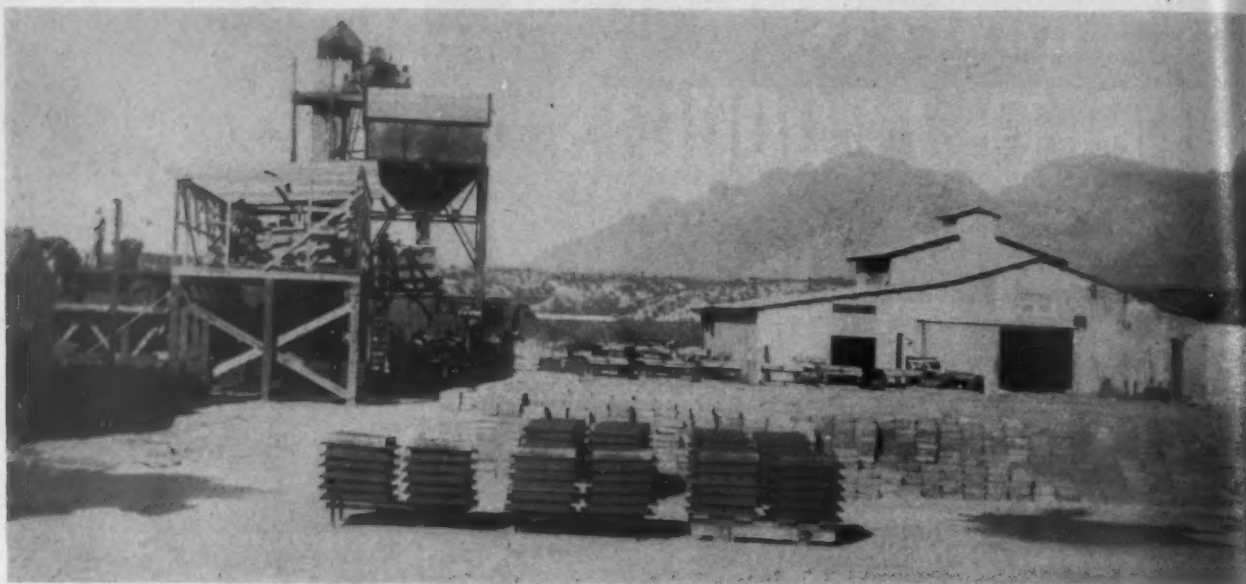
ROCK PRODUCTS'
CONCRETE PRODUCTS
and Cement Products

MARCH
1946

Unloading sacked cement to mixing floor, Concrete Products Co., Tucson, Ariz.



Material Handling



View of plant and yard during construction of cement storage room and truck ramp, to the left. On the left can be seen the sand bin, bucket elevator, and cement room with truck delivering cement

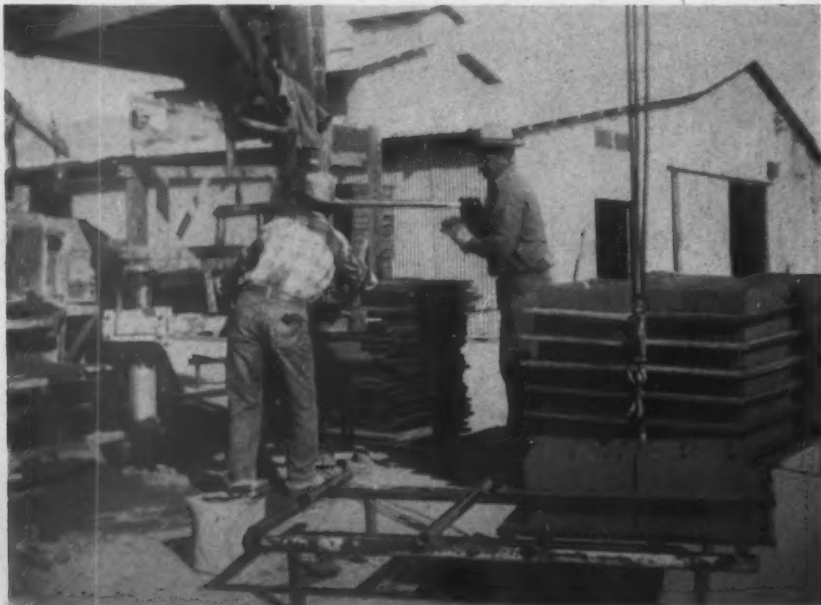
Largest Producer of Small Size Block

Concrete Products Co., Tucson, Ariz., lays out plant to provide most convenient flow of materials and finished products

On the outskirts of Tucson, Ariz., is a concrete products plant which claims the distinction of being the largest producer in the world of smaller sized concrete masonry units. According to President C. J. Wilkerson, the Concrete Products Company

in the five days from December 17 to 22, 1945, inclusive, made slightly over 121,000 concrete block of the 6-in. and 8-in. width sizes. All block are 3% in. high and 12 in. long, and vary in width from 4-in., 6-in., 8-in. and 12-in.

The 4-in. block are used for partitions; the 6-in. and 8-in. are standard load-bearing block testing 1500 p.s.i., and the 12-in. width is used for foundations, public and school buildings as well as a few large residences where the maximum in insulation is desired and cost is not a factor.



Block machine mold has been filled, compacted, excess concrete raked off, and has been swung over pallet stand with block being pressed out by off-bearer

Pay Profit-Sharing Bonus

Organized in the summer of 1937 by Dr. C. J. Wilkerson and Alvin Knapp, the company originally had a capacity of 500 of the 8- x 8- x 16-in. masonry units per day. However, due to sales resistance in marketing the larger block, principally objections of union masons, the plant was changed over to the manufacture of smaller units in January, 1940. It was also about this time that Dr. Wilkerson bought out his partner and assumed personal management of the enterprise. R. D. Wade is office manager; H. E. Brown, production foreman, and S. P. Lowrey, shop foreman. About 35 other employees are regularly employed with a minimum wage of \$1.00 an hour and with all older employees participating in a profit-sharing bonus at the end of the year.

In addition to overhauling its own equipment in a modern shop, the company also repairs machinery for other concrete products manufac-

MATERIAL HANDLING

turers in its territory. Recently the shop forces assembled and installed a complete block plant for John L. Gray at Deming, New Mexico. Other equipment is being prepared at the present time for other neighboring plants.

This company also produces its own sand and gravel aggregates. When the consumption of concrete aggregates became too great to be loaded on trucks by hand shovels, the company tried unsuccessfully for a year to obtain a priority with which to buy a new bucket loader. As its products were not then considered essential to the war effort by W.P.B., the priority was rejected. An old loader was therefore obtained, worn parts were replaced, and a jigger screen was attached to the head, as shown in one of the illustrations.

Unusual Plant Layout

Material passing through a $\frac{1}{2}$ -in. mesh screen contains approximately 30 percent pea gravel which is used. The oversize is diverted to one side and later trucked away for use as fill in the company's yard. The jigger-screen equipped loader screens and loads about one cubic yard per minute into a truck which hauls it about 100 yds. to a truck dumping hopper. This hopper is located below the cement storage platform which is 10 ft. above grade, and one foot higher than the mixer platform. A ramp permits trucks to bring 100-sack cement loads up to the cement storage platform. This unloading ramp is built up to a grade so that the truck bed is even with the floor of the new cement storage room which has been roofed over.

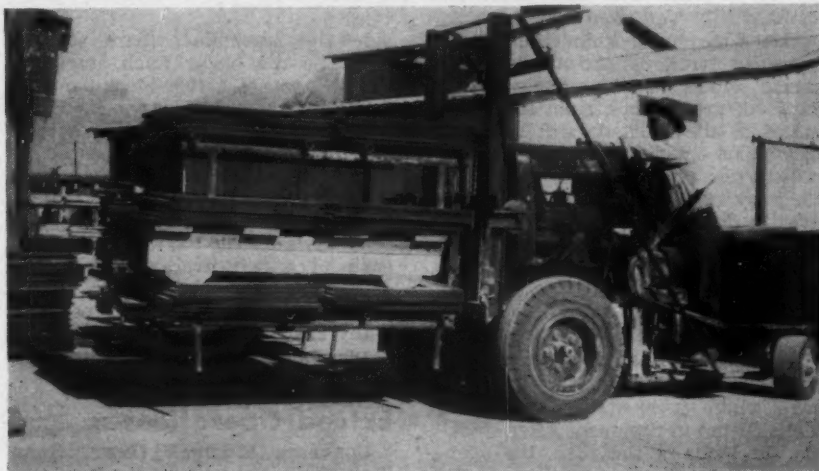
Capacity of the cement storage room and platform behind the mixer is 2000 sacks. Cement consumption of the entire plant is 1000 bbls. a month, a carload arriving every other day on schedule. Rising above the cement platform is a bucket elevator and bin which holds 50 cu. yds. of sand. The lower part of the bin, visible above the mixer, is 9 ft. above grade.

Beneath the mixer, a Flam vibrating block machine is placed between the bin legs on three sides like a letter T. It will be noticed in one of the illustrations that there is a track for a hand hoist trolley with which block on wooden pallets are removed. Concrete drops by chute from the mixer to a table below where it is divided into three equal piles for the three block machine operators.

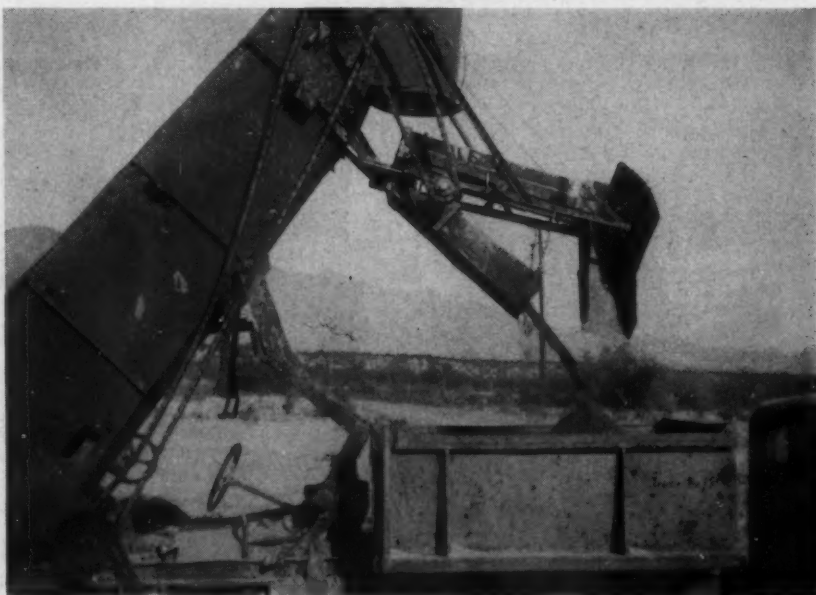
Each batch of 21 cu. ft. contains three sacks of cement. Each machine consumes 1 cu. ft. of concrete per minute or the 7-cu. ft. segment of concrete allotted to the machine is disposed of in seven minutes. The cycle of the Flam machine is about 35 seconds. The off-bearer employs a fork attached to a small block and



Fork lift truck operator returning three skids with empty pallets to block machine



Moving block made the previous day to stockpile area where stackers pile them



Loader equipped with jigger screen. Concrete aggregates passing screen drop to truck and oversize is cast to one side and later used as fill



Truck dumping 4 cu. yd. of concrete aggregates into hopper below cement storage platform for elevation to bin by bucket elevator

tackle rope hoist connected to the overhead trolley, previously mentioned, which picks up and carries the pallet of green block from the pallet stand to the skids. It will be noted in one of the illustrations that the pallets rest one on top of the other, six high.

A fork lift truck brings in three skids with empty pallets from the yard, places them convenient to the off-bearer operator who stacks the pallets close by and locates the skids as needed for loading. The fork lift truck operator then picks up the loaded skid and transports it to the yard where it is stacked for overnight curing in the open. After stacking the loads in the yard, the operator picks up a load of block made the previous day and spots the skid along-

side the stockpiles where stackers stockpile the block. Each stacker is expected to stack 4000 block per 8-hr. day and receives \$1.00 per hour. Before the fork lift truck was placed in operation, four men on two hand lift trucks were kept busy on this routine.

After curing a week in the yard, the block are loaded out on one of the company's six 1½-ton delivery trucks, each of which averages four trips daily and carries 1000 4-in. block, 750 6-in. or 600 8-in. units per trip. Many customers, of course, load and haul block in their own truck and trailer equipment.

Extend Operations

CONCRETE MASONRY UNITS, Hamilton, Ohio is the name of a new concern organized to manufacture con-

crete masonry units. Gail B. Hamer, president of Dayton Builders Supply Co., Dayton, Ohio, and B. F. Cochran, formerly with Universal Atlas Cement Co., Dayton, Ohio are the principal owners. The plant is nearing completion, and manufacturing operations are expected to start April 1, with a capacity of 5000 units per day. Mr. Cochran will devote his entire time to the enterprise as general manager.

Make New Type Block

JAMES B. BROWN, San Antonio, Texas, has announced his entry into the concrete block business. For the past 25 years he has been associated with the building industry as an architect and contractor. His building, with a working area 56- x 60-ft., and a curing area of four tunnels, each 13- x 40-ft., will accommodate five machines each producing 2000 blocks per 8-hr. day. Equipment will include five hydraulic type block machines made by Bob Burns Machinery Corporation, Fort Worth, Texas. Modular blocks will be made having webs that will permit the bricklayer to clip the block to 3¼-, 7¼-, 11¼-, or 15¼-in., the full size of the unit. All units will be 5½-in. high to build three courses in 16 in.

Build Block Plant

POSTORIA CONCRETE PRODUCTS, INC., Postoria, Ohio, has announced through R. W. Rankin, vice-president and general manager, that a modern factory for the manufacture of concrete block is being constructed. It is expected the plant will be completed by April 1.

Change Name

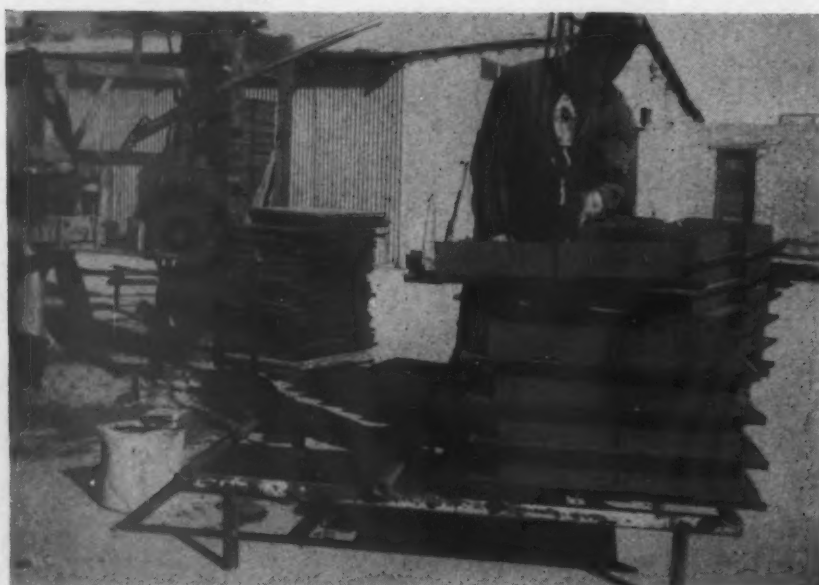
SHELTON CONCRETE PRODUCTS Co., Shelton, Wash., has changed its name to Mason Materials Co. Howard Moyer, recently discharged from the Navy, will be in charge. In addition to concrete products, the company sells insulation materials, cement paint, and damp-proofing products.

Vermiculite Concrete Slabs

KNOX CONCRETE PRODUCTS Co., Knoxville, Tenn., is reported to have started the manufacture of vermiculite concrete slabs. Precast units, 3½ in. thick, 32 in. wide and up to 8½ ft. long, are being made as a sound-proof, fireproofing and insulating building material.

Adds Block Capacity

CONCRETE PRODUCTS Co., Falmouth, Mass., recently completed a 40- x 50-ft. addition and increased capacity up to 2000 concrete block per day. A. L. Bowman, owner, has taken Arnold H. Burrough, a Navy veteran, into partnership.



Block bearer operator uses a fork attached to a small block and tackle rope hoist connected to overhead trolley for picking up and carrying pallet of green block to skids

POSTWAR Concrete Masonry Plants

To meet tremendous demands for concrete block, manufacturers are now building plants or designing new structures

CONCRETE MASONRY will be entering a new era, just as soon as restrictive measures will be relaxed sufficiently along with availability of other essential building materials and labor, to permit filling the vast backlog of accumulated necessary construction that has been piling up since the war began. The immediate future

By BROR NORDBERG

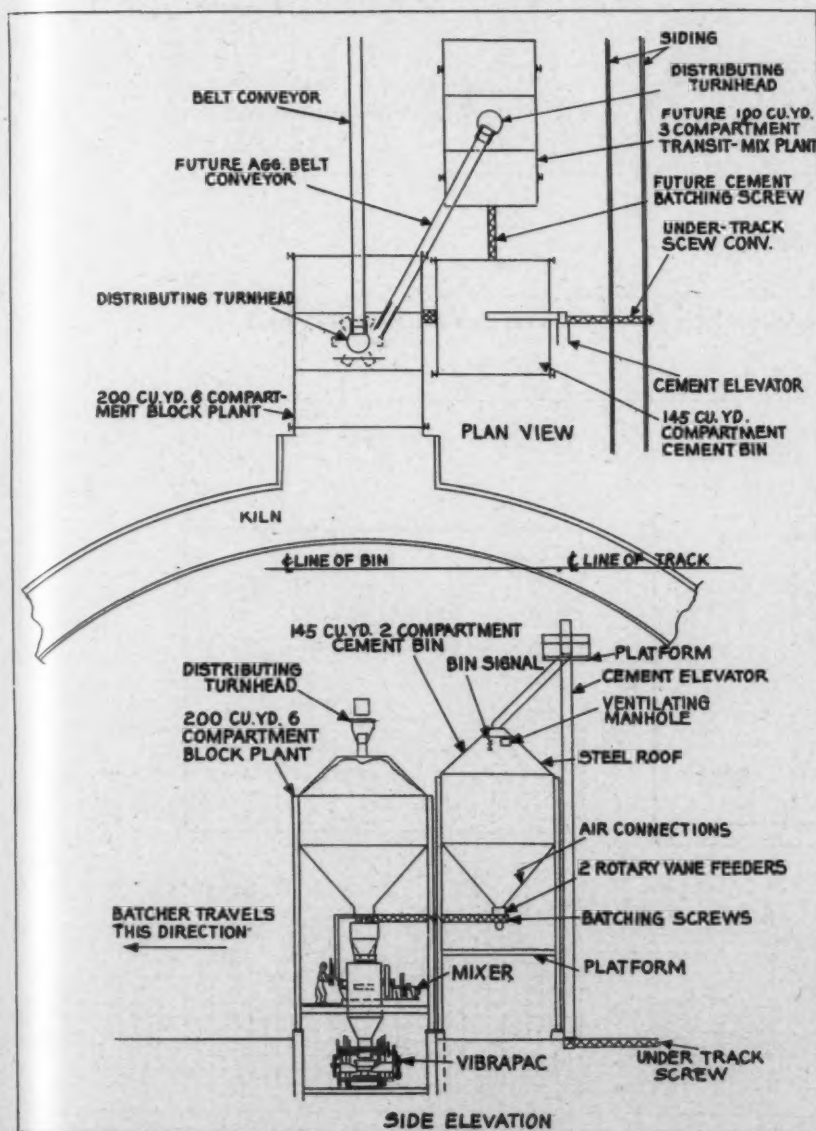
will be one of tremendous demand for building products to be followed, possibly five years hence, by a gradual settling down to more normal business conditions with increasingly tightening competition for sales.

The industry has been preparing to make great strides insofar as production efficiency, with attendant perfection of product, is concerned. During the past year or two, plants have been designed to meet postwar competition with other industries and to do its part in holding the line against excessive prices to consumers. It is our observation that new plants to be built represent, collectively, the most important step forward yet to be taken by the industry, within what will require but a matter of months for accomplishment.

It wasn't so many years ago that the industry on the whole was little removed from the "back yard" stage, which conditions probably still linger in the minds of many and have given encouragement to prospective newcomers into the industry who probably have not yet learned what it will take to compete in the business. The introduction of the high capacity, vibratory-type block machine just a few years ago was a remarkable step forward in the evolution of the industry, that enabled it to grow and increase in prestige.

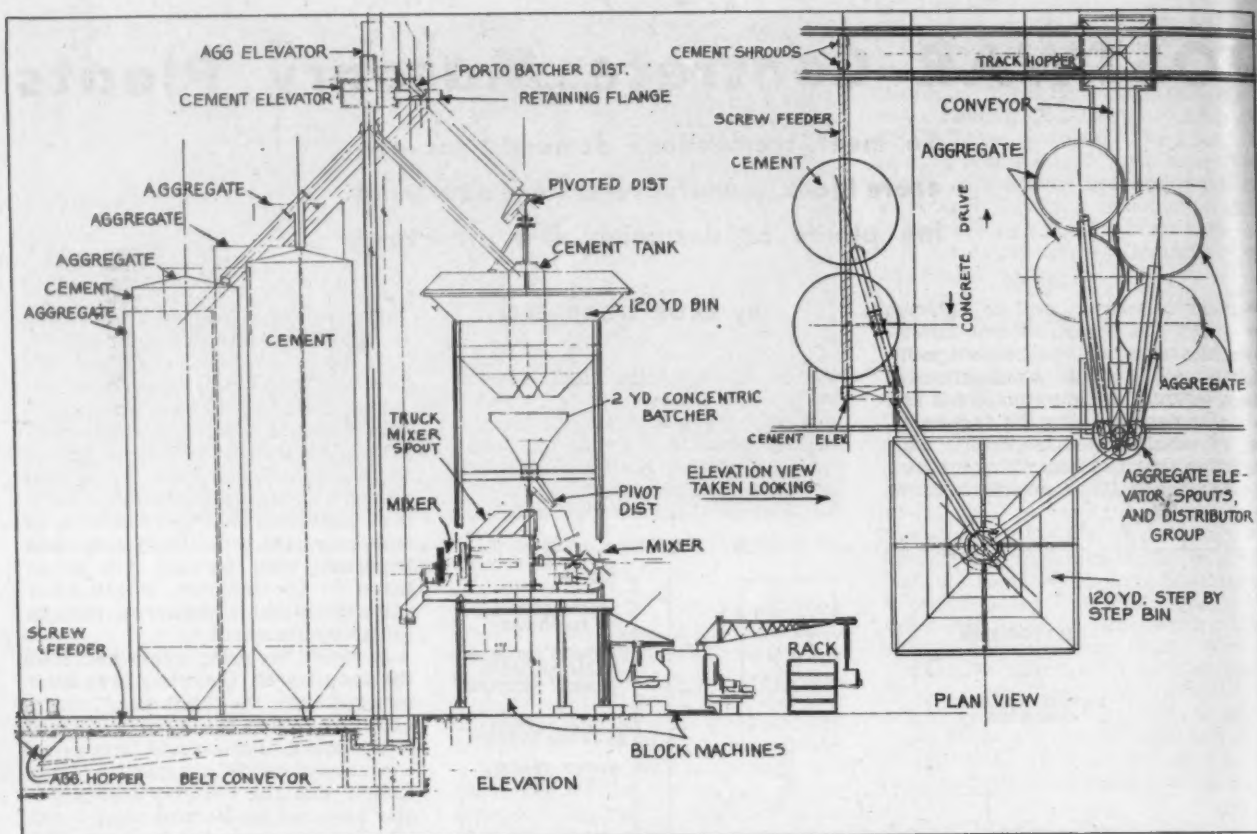
Design Plant Around Machinery

The manufacturer had perfected machines to manufacture high quality concrete units at increased capacity and has continually perfected these machines—other types as well as vibratory—but, in most cases these machines literally were "inserted" into plants as they existed. Capacity and quality of product improved but production efficiency, for the entire operation, could not go forward. The types of plants now in design for experienced manufacturers of concrete masonry units are engineered. They are being designed for synchronization of all phases of operation, recognizing the importance of relative location of machines to other machines and to curing facilities, the economies of the various material-handling methods, the need for elimination of back-breaking labor and the savings that accrue from integrated engineering of every step from the time aggregates are received until the finished units are loaded for delivery to the job. The fact that the manufacture of concrete masonry units is really a material-handling business throughout is now being recognized, and attention is being given toward the ma-

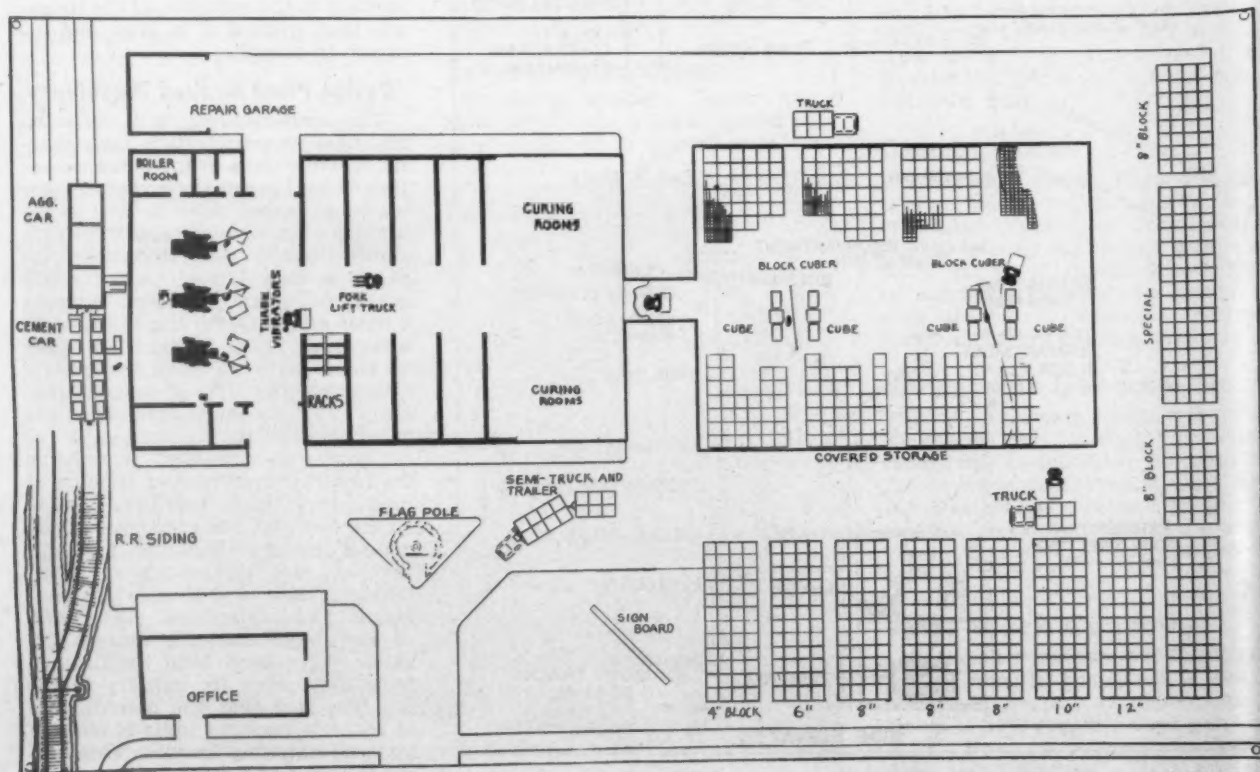


Unusual plant design of southern plant which provides for ready mixed concrete as well as block manufacture. Note clever semi-circular arrangement of curing room

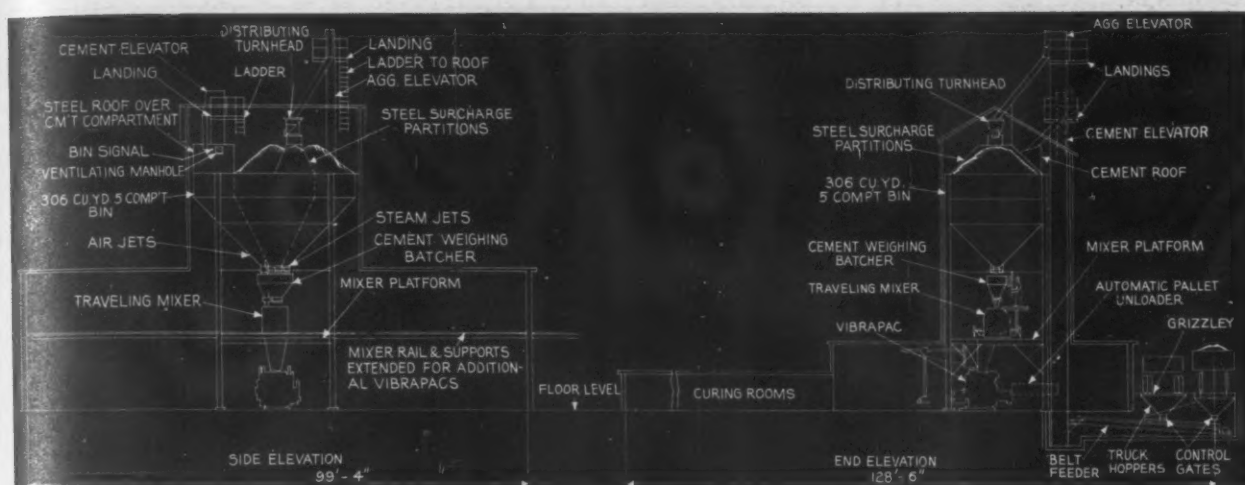
PLANT DESIGN



Elevation and layout of combination ready mixed concrete and block manufacturing operation



Concrete block plant layout design for most efficient movement of units from machines to curing rooms and storage



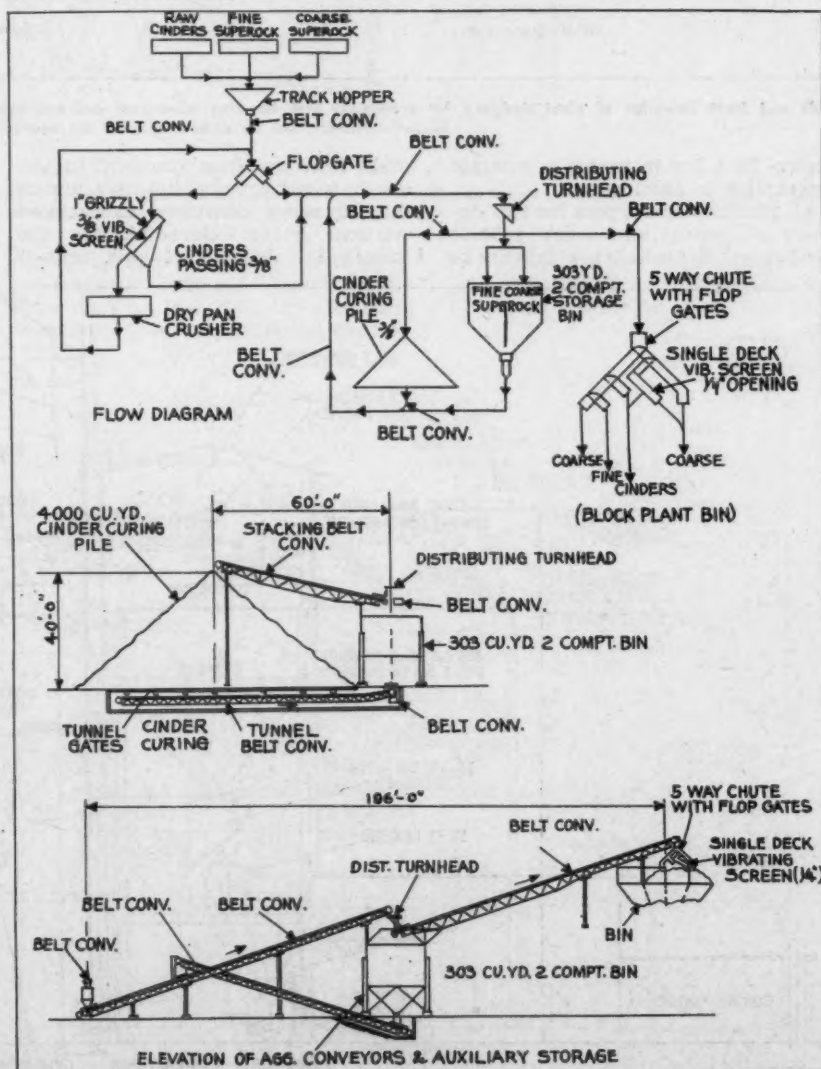
terial-handling functions. That is where much economy can be gained.

The industry had apparently suffered until recently for lack of competent engineers qualified to design plants, giving consideration to all factors and the overall picture but, when the current demand arose for new plants, it soon developed that machinery manufacturers had much to offer and some extremely interesting designs of plants have been developed through their cooperation with producers.

A representative group of designs for plants to be built are shown herewith. They were secured from manufacturers of concrete products machinery and from manufacturers of batching machinery and bins, and represent plants to be built for large and medium capacities. Small, efficient plants are being designed, as well, but they do not lend themselves to some of the processes illustrated here, such as the use of bulk cement, by virtue of their lower capacities.

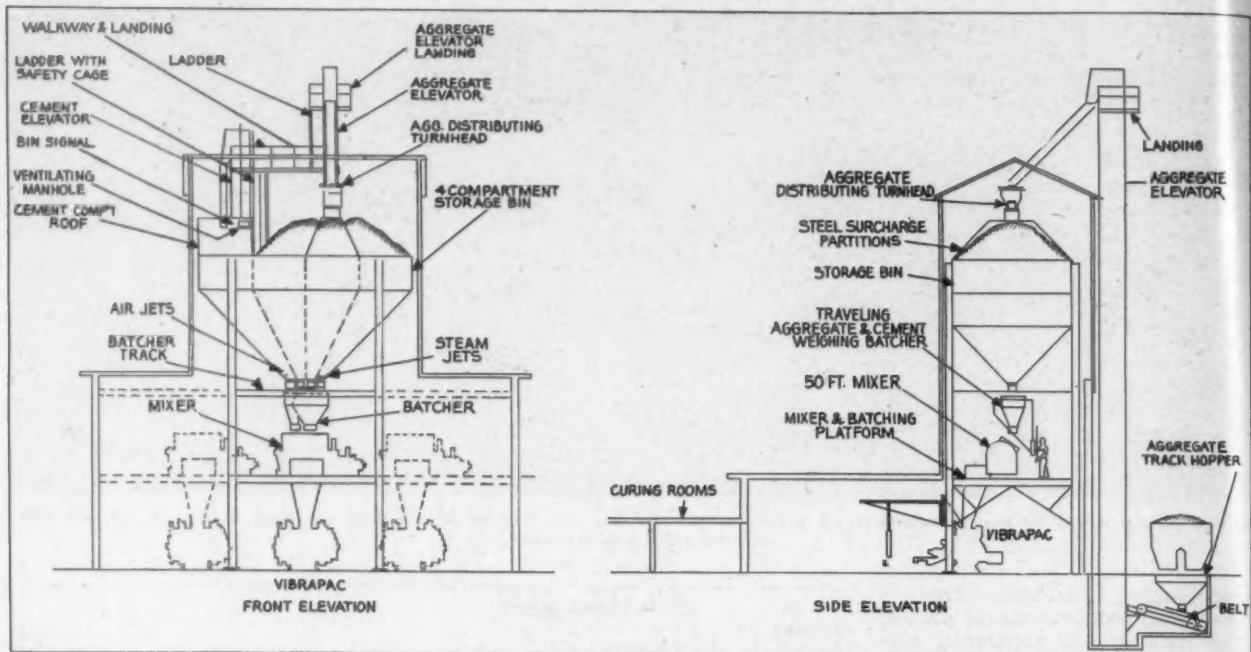
More Bulk Cement

A study of the designs shown, and others received, reveals a number of definite trends in manufacture. For plants of 3000 or 4000 units capacity (8- x 8- x 16-in. or equivalent) and up, the use of sacked cement with all its well-recognized inefficiencies is outmoded in favor of bulk cement. The designs obviously show that the industry, through manufacturers of batching equipment and bins, is to profit from the experiences of ready-mixed concrete producers. Most of the masonry producers large enough to have design drawings made are adopting overhead bins of the self-cleaning type, with batching equipment below to serve one or more concrete block machines. On most of the drawings, a single bin with multiple compartments, three to six for aggregates, and one for bulk cement is



Flow sheet for handling lightweight aggregates and cinders provided in the design of a Tennessee plant. Note arrangement of conveyors and method of reclaiming from curing pile

PLANT DESIGN



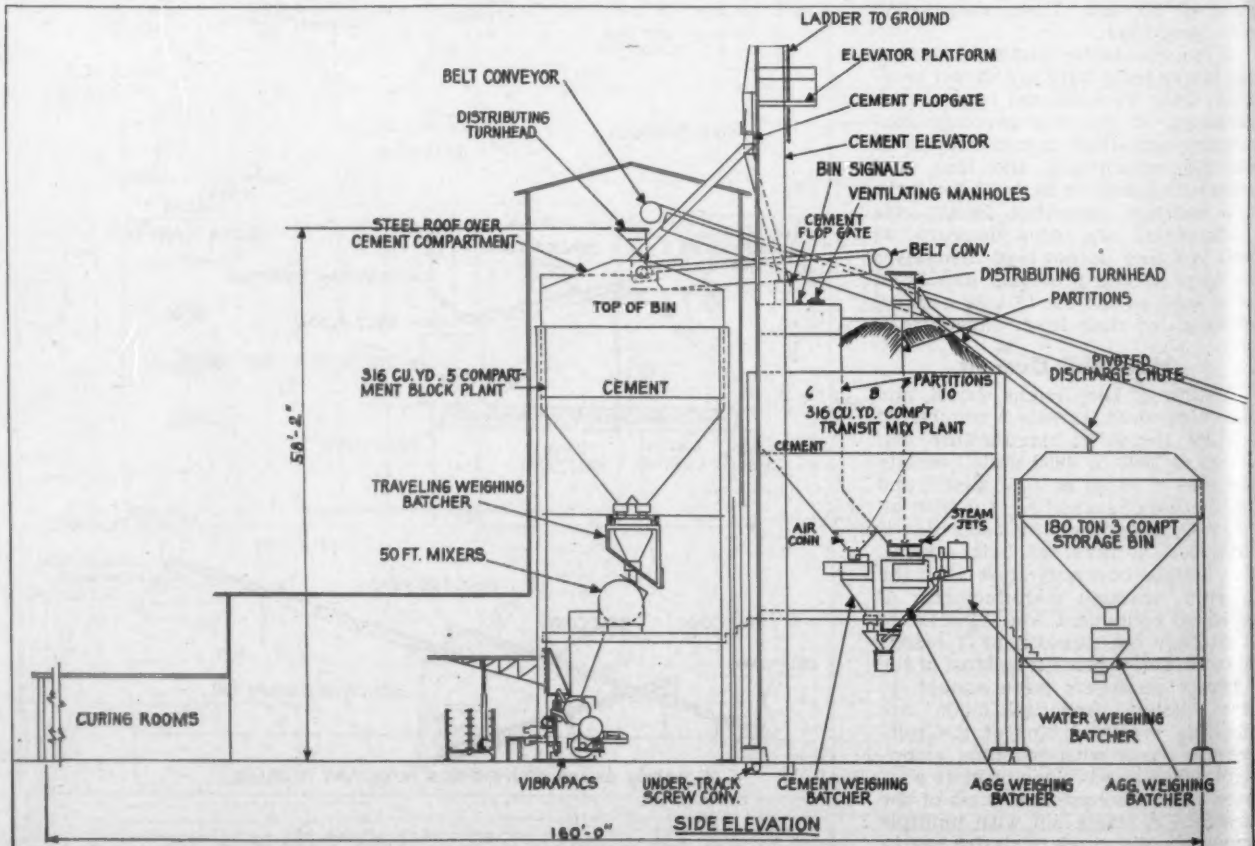
Side and front elevation of plant designed for convenient bulk handling of cement and aggregates with track hopper, short conveyor, and two bucket elevators, one for cement and one for aggregates

shown. In a few instances a separate cement bin is provided.

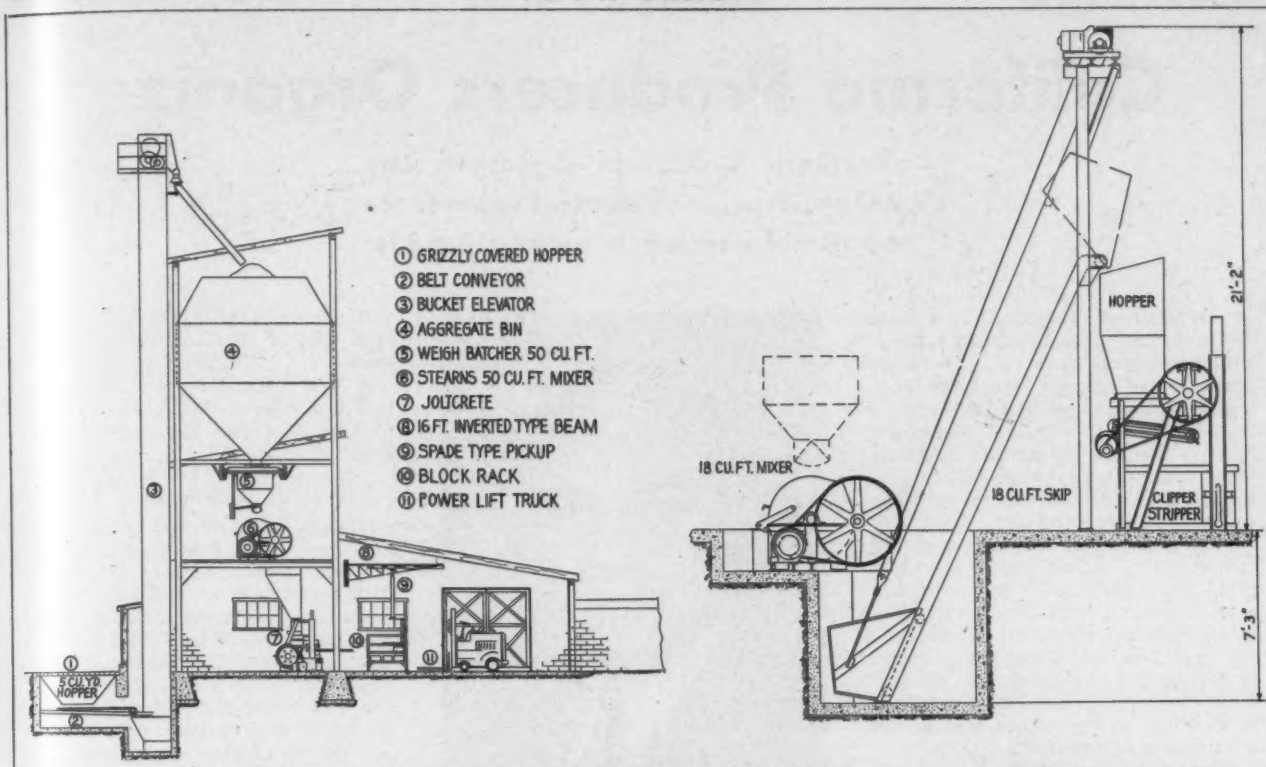
All provide for hoppers for rail delivery of cement and a few provide for hoppers for bulk truck delivery as

well. Practices long standard in the ready-mixed concrete industry, under-hopper screw conveyors to enclosed vertical bucket elevators, are the means for delivery of bulk cement

into the overhead bin or bin compartment. Air lines to stimulate flowout from cement bins, and vibrators, are provided for in the designs and several show the anticipated use of bin



Another example of a ready mixed concrete plant tied in with a concrete products plant



Left: Example of block plant design with the mixer mounted on a platform above block machine. Right: Simple arrangement for the smaller plant where the mixer is located at ground floor level

signals to indicate when cement bins are full and the use of rotary feeders at the bin throats for feedout to batchers or screw conveyors.

Most aggregates bins studied have provision for the introduction of live steam into the bottom for Winter operation. Capacities vary from 200 cu. yd. in six compartments for a plant to manufacture 5000 units per normal day to 306 cu. yd. in five compartments for a plant of like capacity. However, the latter plant definitely is designed for later doubling of capacity. A plant of 15,000 unit capacity daily has 350 cu. yd. aggregates capacity in five compartments. These bin capacities are typical only of designs we have examined.

Provide Both Rail and Truck Hoppers

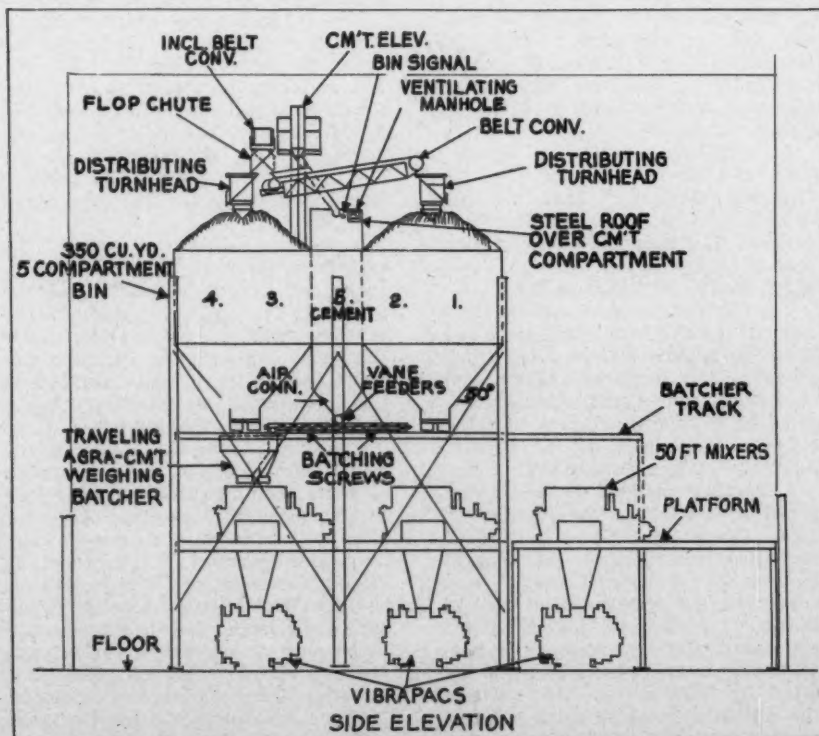
The majority of plans examined provide hoppers for receiving aggregates by rail as well as truck, and inclined belt conveyors are used for transportation into the bins via distributing turnheads for the several bin compartments. However, some utilize bucket elevators. Availability of space no doubt is a factor in the selection of type of handling equipment.

Travelling weigh batchers apparently will be the popular method for batching, where more than one mixer is involved or when provision is being made for future doubling or trebling of block manufacturing capacity with

individual mixers. The use of batching screws to batchers is indicated in some designs. In practically all cases it is noted that very generous capac-

ity in batch mixer sizes is provided. One manufacturer, with a design for 5000 unit production daily and pro-

(Continued on page 144)



Elevation plan of new Michigan plant. Cement storage is in the center between aggregates bins with screws to carry cement to batcher weighing mechanism

California Producers Organize

Northern California Concrete Masonry Association stresses importance of manufacturing a quality product

CALIFORNIA is having a veritable "boom" in concrete masonry. Over a hundred new block manufacturing plants have sprung into existence within a year. And still the demand is so great that the larger plants are four or five months behind in filling their orders, and the smaller plants are selling their blocks on a "first come, first serve" basis.

Such a situation, although it makes selling easy, brings with it many problems. New and inexperienced manufacturers, in their desire to deliver blocks quickly to urgent customers, may not hold them long enough to develop full shrinkage, and cracked walls result. Or, they may not wait to work out proper mixes, and so sell a sub-standard product.

On account of these and many other problems, some of the older block manufacturers of Northern California, that is, the portion of the State lying north of San Luis Obispo and Kern Counties—recently decided to call a meeting of all concrete masonry manufacturers of Northern California in order to form an association, or rather to revive the old organization, which was formed in 1937. This group, named the California Concrete Masonry Association, was statewide in scope, but lapsed during the war.

In Southern California, about a year ago, there was organized the Concrete Masonry Manufacturer's Association of Southern California with E. P. Ripley, manager of General Concrete Products, Inc. of Van Nuys, California, as president.

The formation of a similar association in Northern California was therefore a logical step. Accordingly, all names and addresses which could be secured were listed, resulting in a total of 68 manufacturers of which only 10 have been in the concrete masonry business longer than a year.

A meeting was held at the De Anza Hotel in San Jose on January 25, 1946. There were 62 persons in attendance, representing 34 separate block manufacturing plants.

Mr. Ripley believes that unionization of all concrete masonry plants will eventually be necessary because of the pressure which is being exerted by the unions. He discussed the advantages of securing a group contract for all manufacturers through the two organizations rather than for each separate plant to ne-



G. Frank Steigerwalt, newly elected president of Northern California group

gotiate its own individual contract.

Group insurance policies which have been written to cover all concrete masonry manufacturers who are members of the Southern California Association also were described by Mr. Ripley who pointed out the advantages to all concerned if the Northern California Association would come in under the same group policies.

It was announced that tests of the structural strength of concrete masonry walls were recently made by Professor Converse of the University of California at Los Angeles, under the sponsorship of the Portland Cement Association at Los Angeles and the cooperation of the Pacific Coast Building Officials Conference.

There was some discussion of the investigations being made by Office of Price Administration preparatory to writing a ceiling price order for concrete blocks in Northern California. Manufacturers were urged to attend the meetings which will be held by Office of Price Administration before the price order is written, and to be sure to present a careful analysis of their costs at that time, covering all types and sizes of blocks.

Other meetings of the Northern California Concrete Masonry Association will be held at the call of the president and members are enthusi-

astic in their belief that the association will be of real benefit to the industry.

A new organization was effected, and was named the "Northern California Concrete Masonry Association."

Officers

Officers elected for 1946 were: President, G. F. Steigerwalt, Haydite Concrete Products Co., San Rafael, Calif.; vice-president, C. H. Howard, Basalt Rock Co., Napa, Calif.; secretary-treasurer, R. D. Rader, Portland Cement Information Bureau, San Francisco, Calif. Members of Executive Committee are: Harry Brown of Brownlite Products, Modesto; H. W. Chutter of Jourdan Concrete Pipe Co., Fresno; and E. B. Hanson, of Davis & Hanson, San Carlos, Calif.

Speakers were H. W. Chutter, E. F. Brovelli and G. F. Steigerwalt, all of whom stressed the necessity for making a quality product, carefully manufactured and thoroughly cured. They also pointed out the fact that while selling is no problem at the present time, the size of the future market will depend upon the reputation which is built up now with building inspectors, architects, engineers, builders and the public generally.

New Building Code

President Steigerwalt explained the provisions of Chapter 24 of the 1946 Uniform Building Code, which will be off the press within a few weeks. This is the chapter on masonry, and it has been entirely rewritten. It is believed that the new masonry chapter will clarify most of the controversial matters regarding the use of concrete masonry.

A guest at this meeting was E. P. Ripley, president of the Concrete Masonry Manufacturers Association of Southern California. He made several helpful suggestions based on the experience of his organization. He believes that, due to the great length of California, two separate organizations will function better than one statewide association, but that there should be close cooperation between them.

Registration

E. F. Brovelli, Geo. Kay, Carl Howard, C. W. Gillies and Malcolm McIntyre, Basalt Rock Co., Inc., Napa.

(Continued on page 142)

Besser SUPER VIBRAPAC

Fully Automatic

One Set of Plain Pallets for All Sizes of Units

Additional pallet cost eliminated. Size Vibrapac Plain Pallet: 18½" x 26".

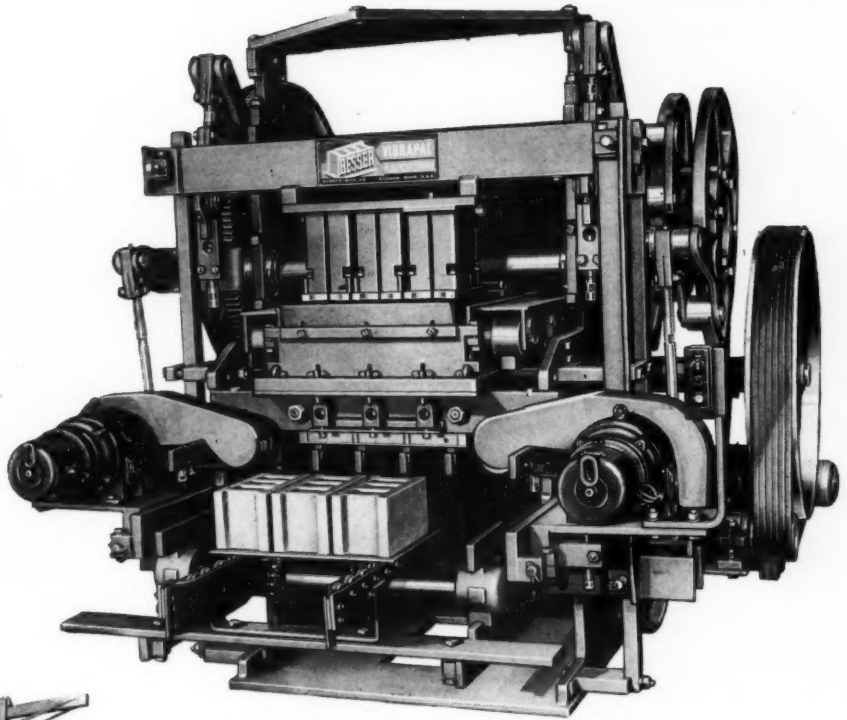
8" block made 3 at a time.

6" block made 4 at a time.

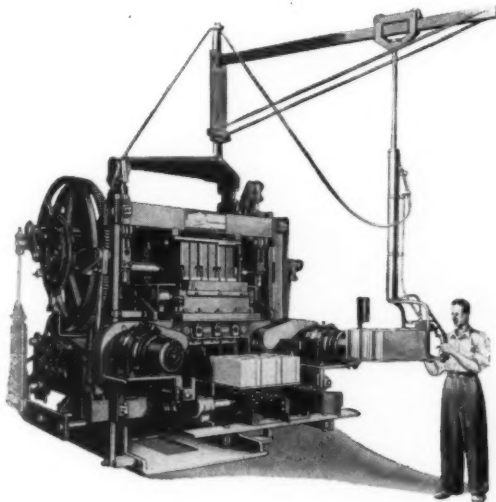
4" block made 6 at a time.

Solid brick made on end 32 at a time. Other sizes made in equivalent multiples on one pallet.

FULLY AUTOMATIC MACHINE. Continuous full capacity operation. No machine operator required. The Vibrapac sets and keeps the pace. Pallets are fed automatically.



Super Vibrapac machine dimensions: Length 13'2¾". Width 8'11½". Height 8'2" (without Offbearing Hoist).



Note ease of handling block with Besser Offbearing Hoist. No lifting! Operator merely guides the hoist.

POWER OFFBEARING HOIST. One man offbears 600 8" x 8" x 16" units or equivalent per hour.

GREATER PRODUCTION. 600 8" x 8" x 16" block, or equivalent in smaller units or fractionals, made per hour.

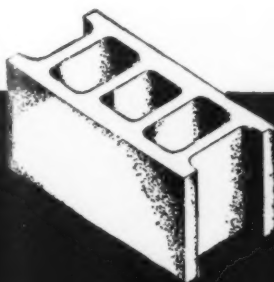
INSTANTANEOUS MOLD RELEASE. No tools are required. Complete mold attachment change in less than 30 minutes.

UNDIRECTIONAL VIBRATION. The mold rests on rubber and is free to vibrate in any direction. With no metal-to-metal contact between mold and frame, there is no crystallization of steel and vibration sound is minimized.

UNIFORM CONTROL OF DENSITY AND TEXTURE OF BLOCK as required for different uses. Accuracy of dimensions secured by vibration under pressure within the mold.

PLAIN PALLET AND BOTTOM OF MOLD SEALED BY ACCURATE FITTING CONTACT DURING VIBRATION. Semi-wet mix, for greater strength units, can be used without "bleeding" of cement, fines or water.

STRENGTH AND DURABILITY, SIMPLICITY OF CONSTRUCTION. One piece steel frame. Few moving parts. High production with slow speed cam-controlled moving parts insures long life of machine.

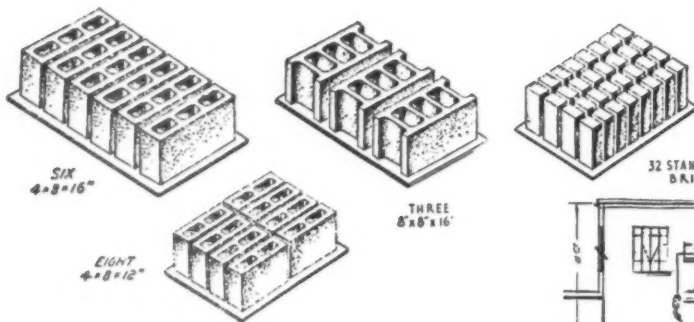


DESSER MANUFACTURING

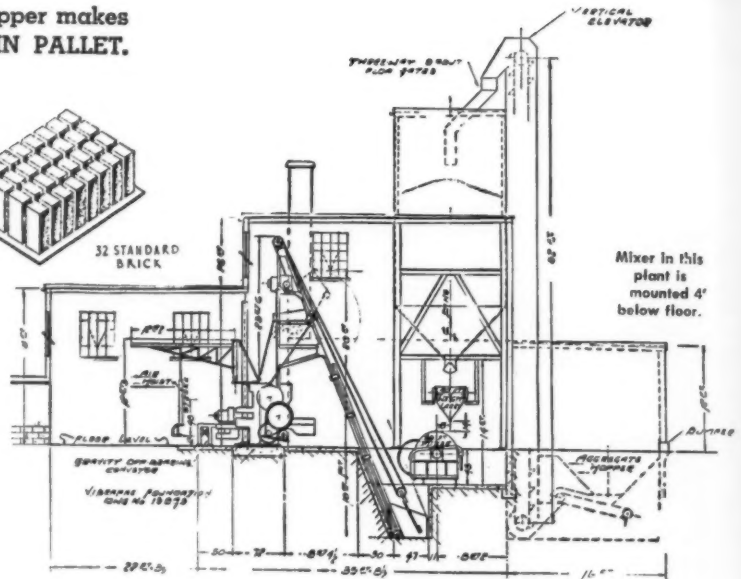
ALPENA, MICHIGAN, U. S. A.

Besser Unitized *Fully Automatic* SUPER VIBRAPAC!

● The Besser Super Vibrapac Plain Pallet Stripper makes the various sizes in multiples on ONE PLAIN PALLET.

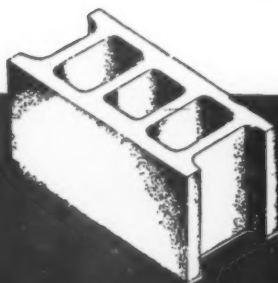
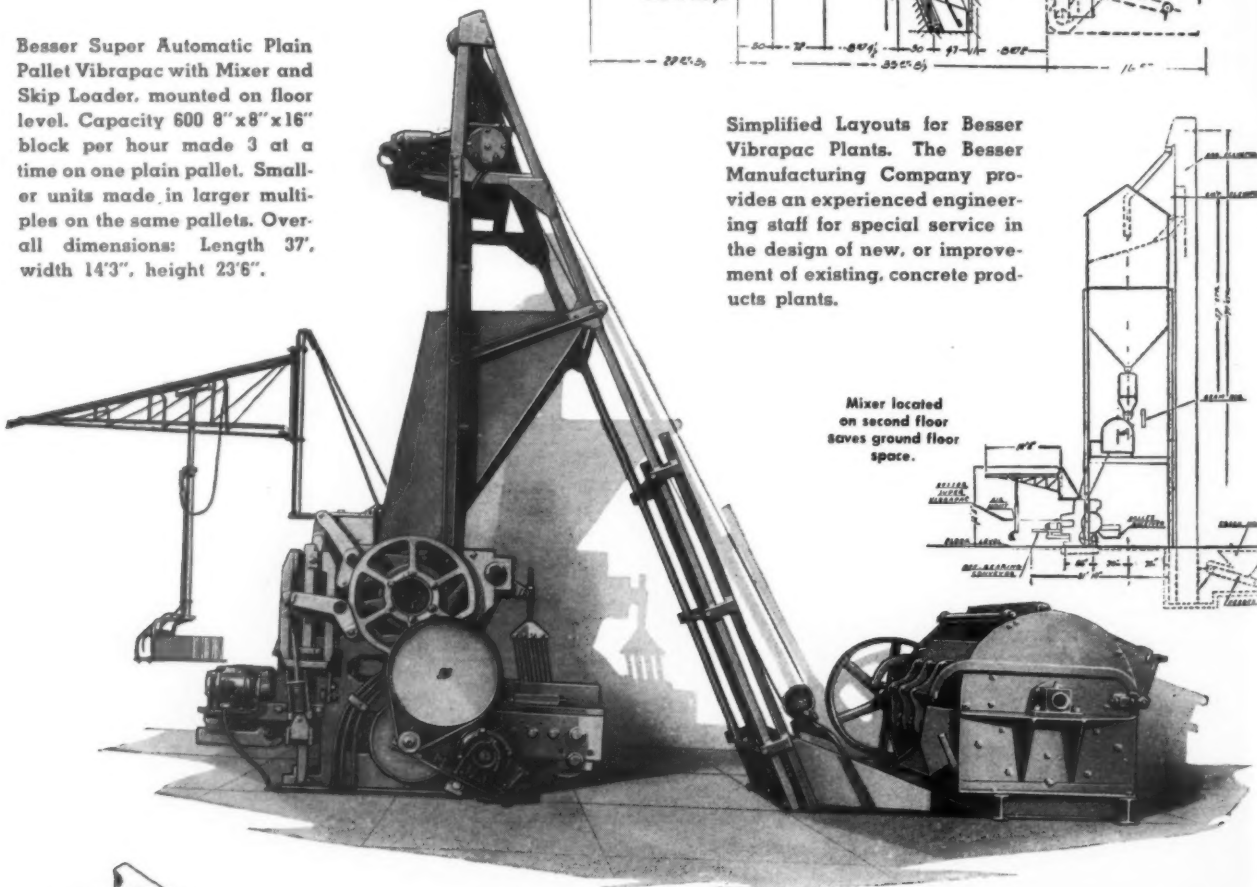
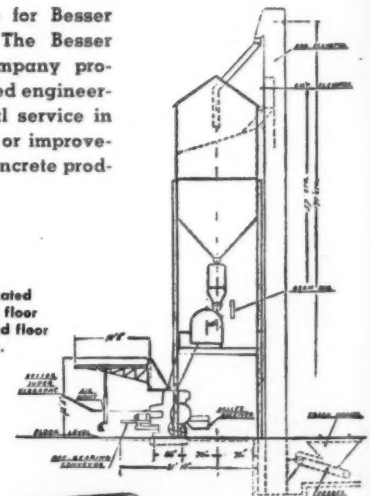


Besser Super Automatic Plain Pallet Vibrapac with Mixer and Skip Loader, mounted on floor level. Capacity 600 8"x8"x16" block per hour made 3 at a time on one plain pallet. Smaller units made in larger multiples on the same pallets. Overall dimensions: Length 37', width 14'3", height 23'6".



Simplified Layouts for Besser Vibrapac Plants. The Besser Manufacturing Company provides an experienced engineering staff for special service in the design of new, or improvement of existing, concrete products plants.

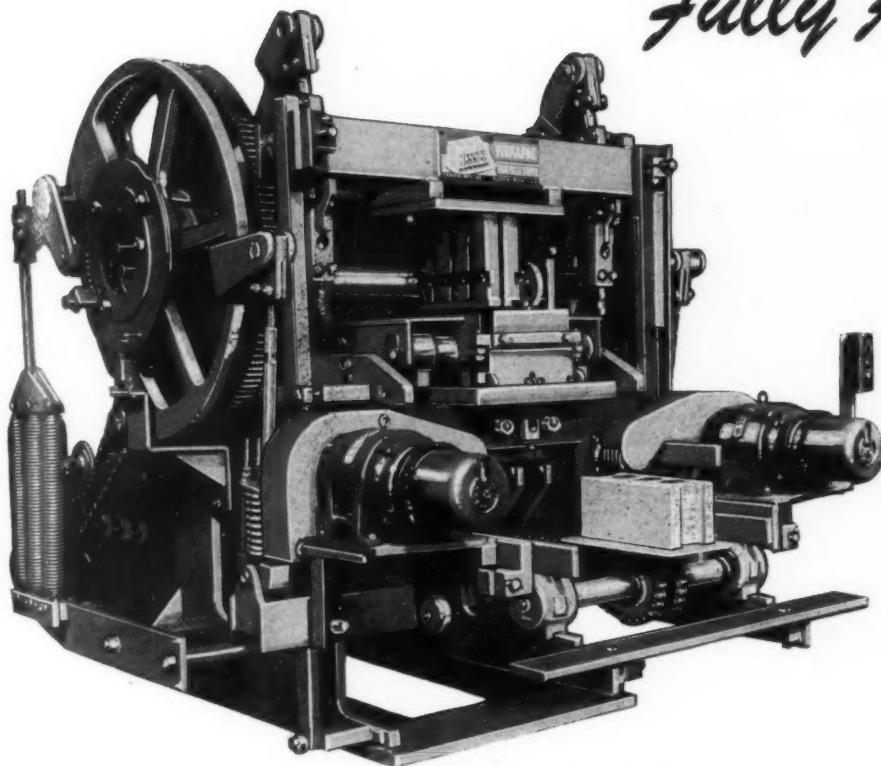
Mixer located on second floor saves ground floor space.



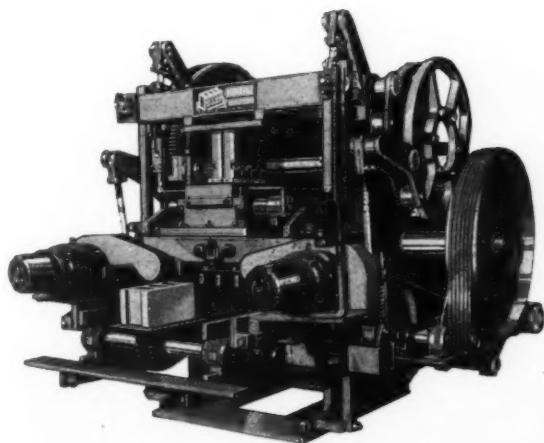
BESSER MANUFACTURING CO.
ALBENA, MICHIGAN, U. S. A.

Besser VICTORY VIBRAPAC

Fully Automatic



Victory Vibrapac machine dimensions: Length 13'2 3/4". Width 8'4". Height 8'.



Victory Vibrapac right side view.

One Set of Plain Pallets for ALL SIZES OF UNITS

Victory Vibrapac Plain Pallet
Size 13" x 18 1/2".

12" x 8" x 16" block — 1 at a time.

8" x 8" x 16" block — 1 at a time.

6" x 8" x 16" block — 2 at a time.

4" x 8" x 16" block — 3 at a time.

Other sizes made in equivalent multiples on One Pallet.

FULLY AUTOMATIC MACHINE. Continuous full capacity with no machine operator. Pallets are fed automatically.

POWER OFFBEARING HOIST. Off-bearing of single or multiple units made easier.

GREATER PRODUCTION. 240 - 8" x 8" x 16" or 12" x 8" x 16" block or equivalent in smaller units or fractional, made per hour.

INSTANTANEOUS MOLD RELEASE. No tools required. Complete mold attachment change in less than 30 minutes.

UNDIRECTIONAL VIBRATION. The mold rests on rubber and is free to vibrate in any direction with no metal-to-metal contact between mold and frame.

CONTROL OF DENSITY AND TEXTURE. Uniform control of density and texture of block as required for different uses.

DIMENSION CONTROL. Accuracy of dimensions is secured by vibration under pressure within the mold.

PLAIN PALLET AND BOTTOM OF MOLD IS SEALED BY ACCURATE FITTING CONTACT DURING VIBRATION. Semi-wet mix for greater strength units can be used without "bleeding" of cement, fines or water.

STRENGTH AND DURABILITY. Simplicity of construction. One-piece steel frame. Few moving parts. High production with slow speed of cam-controlled moving parts insures long life of machine.

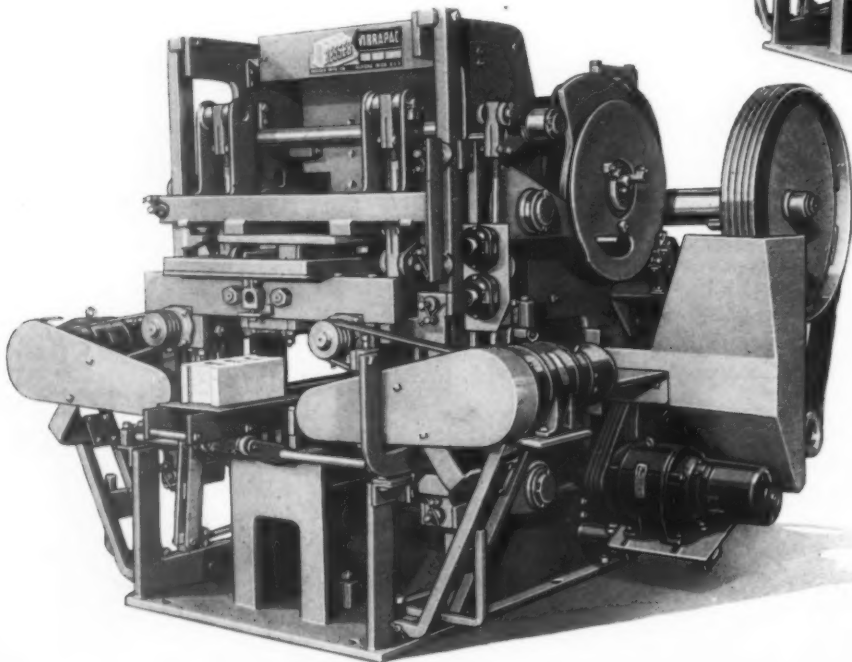
BESSER MANUFACTURING CO.
ALPENA, MICHIGAN, U. S. A.

BESSER MASTER VIBRAPAC

Power Operated

●The Besser Master Vibrapac is a Plain Pallet Stripper designed primarily for smaller plants. The machine is power-operated (except hand forwarding block for off-bearing). Like the Super Vibrapac and Victory models, the Master Vibrapac has the advantages of the original Besser principle of making all sizes and types of units on one set of Plain Pallets. It also has the advantage of Undirectional Vibration which makes possible the control of density and texture to meet requirements of insulation against moisture, sound penetration and for acoustical correction.

Besser Master Vibrapac machine dimensions:
Length, 11'4". Width, 8'2". Height, 7'2".



Besser Unitized Master Vibrapac with Besser Spiral Blade Batch Mixer and Skip Loader. Capacity: 1500 - 8" block per 8-hour day (approx.). Overall dimensions: Length 23'4". Width 8'2". Height 18'.

●All block, brick or tile . . . with air space or solid . . . made on one set of Plain Pallets.

Size of Plain Pallet used: 13"x18½".
8" or 12" block made one at a time.
6" block made two at a time.
4" block made three at a time.
Solid Brick made on end.
Other sizes made in equivalent multiples on one pallet.

THE SAVING IN PALLET COST
WILL PAY FOR A
BESSER VIBRAPAC
PLAIN PALLET STRIPPER

Block Machine with Floating Vibrating Units

F. C. GEORGE MACHINE CO., Orlando, Fla., recently placed on the market its line of George Super V concrete block making machinery which is now being distributed on the Atlantic and Gulf seaboard and will extend into other territories as equipment becomes available.

This vibrating block machine provides accessories for two- or three-cell blocks, open-end or square end. Cores are individually mounted on U-shaped flexible steel which combine as mounted floating units capable of attaining a high degree of vibrating action for block production. The floating units control and direct high frequency vibrations in diverse directions, the vibrations being confined within the mold box and withheld from other parts of the machine.

This company's line includes an improved mixer said to give a uniform mix of known density. Conveyors, block pallets, hauling and drying equipment also are available. F. C. George, head of the company, announces that the plant in Orlando is now in process of enlargement to meet increased demands for concrete block machinery.

Push-Button Control Block Machine

KENT MACHINE CO., Cuyahoga Falls, Ohio, is announcing a new block machine which is known as the Vibra-Tamp. This machine features simple positive, push button control; merely drop the pallet and push the button. Concrete mix is vibrated into mold box, and the heavy eight-bar tamper is said to assure a denser block. Cams complete the cycle, delivering block on an automatic take-off at the rate of five blocks per minute.



Machine has both vibrating and tamping action

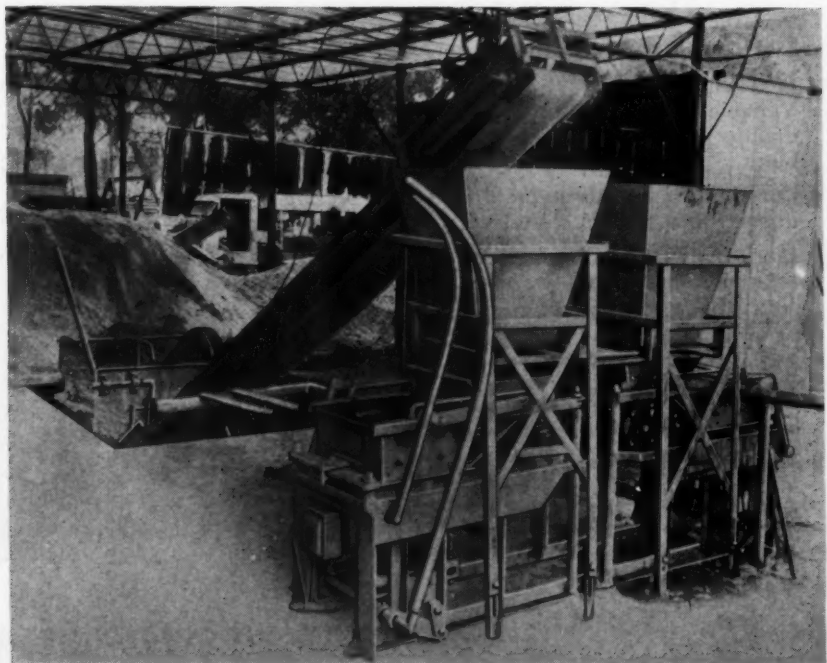


Concrete block machine employing "floating" vibrating units

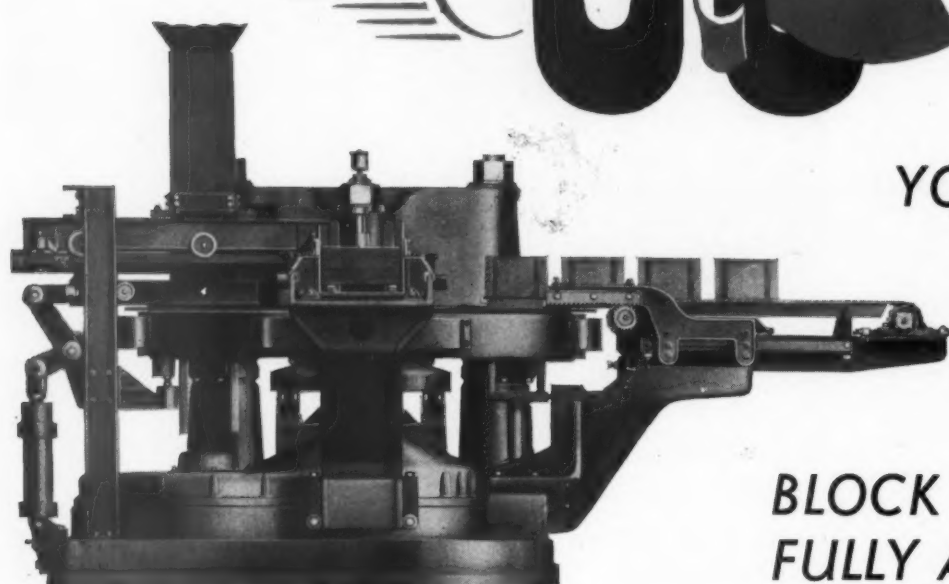
Lever-Arm Action Block Machine

GRAVELY CONCRETE BLOCK MACHINERY Co., Orlando, Fla., has established its own plant after many years' experience in various phases of block machinery production. With the scarcity of concrete block, producers have been placing urgent orders for new equipment.

As shown in the illustration, the block machine developed by Bob Gravely features a heavy duty motor and solid frame for rapid production of heavy products. Care in machining mold box and cores is said to have greatly lessened noise and frame vibration. Ease of operation is obtained through a "one in seven" lever arm action, plus ball and roller bearings and Oillite bronze bushings.



Tandem installation of block machines with concrete fed to hoppers by belt conveyor from mixer



65 YEARS

YOU'LL WANT

J&C

**BLOCK MACHINES
FULLY AUTOMATIC**

Check These Features

- Produces 8 or 12-inch blocks up to 14 per minute—42 4-inch or 28 6-inch blocks per minute.
- Automatic pallet feed. Only machine to successfully feed cored pallets automatically.
- Makes any standard width and air space 16-inch block for which pressed steel pallets are available.
- Variable magnetic vibration supplemented by hydraulic pressure. The ideal combination for perfect block.
- Concrete fed directly to mold. No reciprocating feed hopper. No surplus strike off.
- Block design controllable by variable vibration mold fill and compression.
- Completely automatic—all machine operations electrically controlled. Positive. Foolproof.
- Blocks automatically delivered to conveyor. Supplemental automatic loading of rack if desired. Ultimate in labor saving.
- Machine built of heavy castings. Set on solid base. Minimum Cams, Gears, Levers. Compact. Rugged. Solid.
- Vibration confined to mold. Scientific dampening to give longer life and lower upkeep.
- Simple mold changes. Not necessary to remove mold box from machine.
- All machine movement smooth, harmonic, quiet. Stress and strain eliminated.
- Operation continuous—not cyclic.
- Micro-switches provide positive safety control. Each operation must be completed or machine stops. Cannot run to destruction.
- No special skill or experience required to operate.
- A modern design embodying advanced engineering features not previously used in block-making machinery.
- Write for details.

"Work well done since '81."



★ ★ JACKSON & CHURCH CO. ★ ★

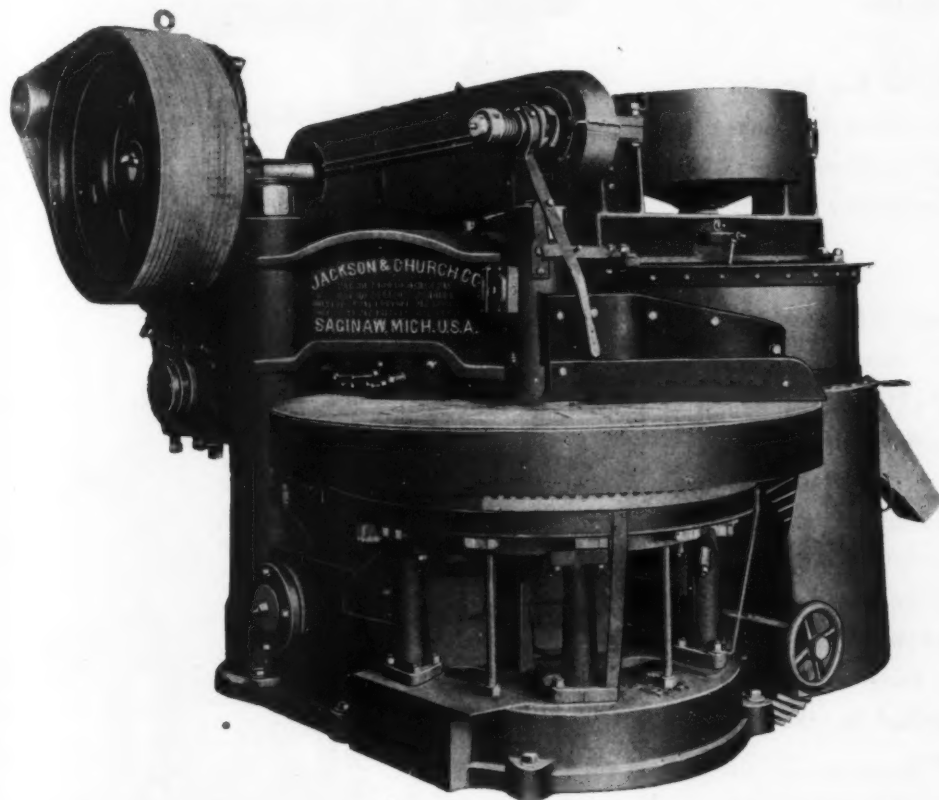
of J & C SERVICE to ROCK PRODUCTS PRODUCERS

"WORK WELL DONE SINCE EIGHTY-ONE"

As we enter our 65th year of manufacture, we thank our customers and good friends for their patronage which has made possible our steady growth.

Through progressive expansion of manufactur-

ing facilities, plus engineering "KNOW-HOW" and expert workmanship, it will be our endeavor that we continue to offer masonry products equipment which will contribute to that industry, economical production of quality building materials.



NO PALLETS
NEEDED FOR
J & C BRICK
PRESSES

Model A Brick Press (at left) makes 60 brick per minute, 28,000 brick per 8-hour day. (The smaller model C press makes 30 brick per minute, 14,000 brick per 8-hour day.)

"Husky — weight 26,000 pounds. Built to give many years of steady production with exceptionally low upkeep. Has what it takes to deliver 150-ton pressure per brick, day in and day out, year after year.

Brick stacked in parallel rows on flat top car or lift platform — 500 to 1200 brick per car or rack. No pallets needed.

Outstanding features of J & C Brick Press

Automatic Operation
Uniform Filling of Mold Pockets
Feed Synchronized with Table Movement
Adjustable Feed
Mold Depth Regulator

Hardened Saw Steel Mold Liners
Slow Moving Parts—Long-Lived
Automatic Tablestop for Removal of Brick
Shear Pin Prevents Overload
Brick—Lean Mixes, Higher Strengths, Low Absorption, Sharp Corners and Edges, Troweled Ends and Sides, Fine Textured Surfaces, Uniform Appearance, Accurate Sizing, Handles Easy, Lay Fast.

SAGINAW, MICHIGAN

ANNOUNCING

National Distribution, Quicker Delivery of the Patented ROCKERCRETE Concrete Block Machine

Reg. U. S. Pat. Off.



ROY W. DARDEN
President & Treasurer
Roy Darden Industries, Inc.



MILTON E. POSEY
Vice-President
Roy Darden Industries, Inc.



M. W. MESSER, A.S.C.E.
Vice-Pres. & Treasurer
Roy Darden Industries
Southwest Div., Inc.
Dallas, Tex.



EBURN D. EMORY
Chief Expeditor
Roy Darden Industries, Inc.



Designed and perfected by those whose entire careers were devoted to actual concrete block plant operation.

Built for Roy Darden Industries by Link-Belt Co., Atlanta, Ga. under Darden Patents

Complete Engineering Service

Selection of plant site, design and layout of buildings, installation of machinery, service calls for efficiency improvement by these men who have been long identified in the industry.

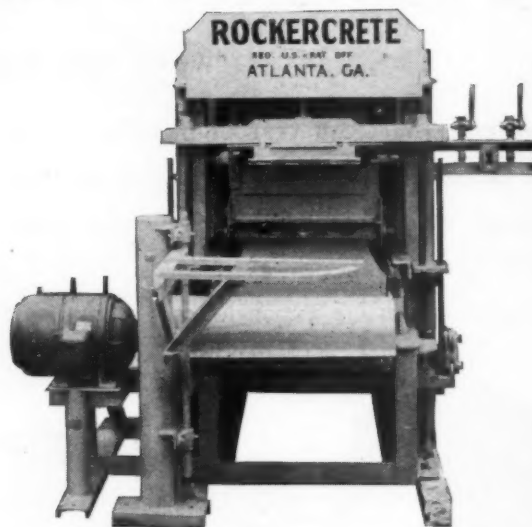


Write for complete information and engineering service.

ROY DARDEN INDUSTRIES, INC.

Bona Allen Bldg.

Atlanta, Georgia



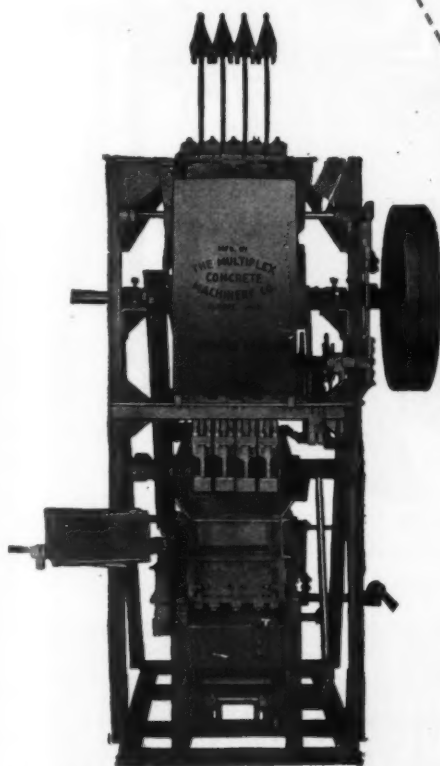
ROCKERCRETE block machine—vibrating and pressure compaction principle with simple air cylinder motivation.



Mixers with exceptionally rugged construction, long wearing parts, trouble free operation. Companion equipment for full plant operation available.

MULTIPLEX PRODUCTION IN

High Gear

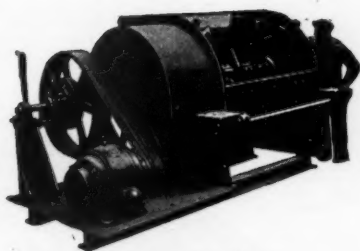


© MULTIPLEX STANDARD TAMPER

This reliable, economical machine produces three to four 8x8x16 in. blocks of uniform high quality day after day with minimum maintenance. The beautiful block produced will build your lasting reputation.

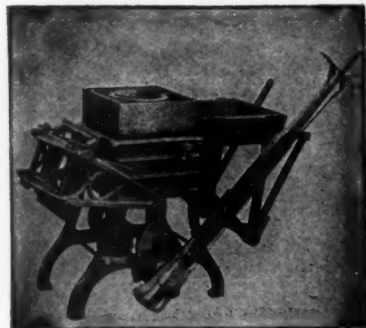
Multiplex block making equipment today is more in demand than ever before. Old users of the Multiplex are expanding their facilities with additional Standard tampers, mixers, etc. Many new plants are being equipped with Multiplex all the way.

Multiplex facilities are taxed to the limit to turn out this vital equipment as fast as possible without sacrificing quality. Or-



● MULTIPLEX MULTI-MIXER

Reverse, screw-type action assures thorough, uniform mixing of every batch. The perfect machine for assembly-line type block making.



● FLUE-BLOCK . . .
A PROFITABLE SIDELINE

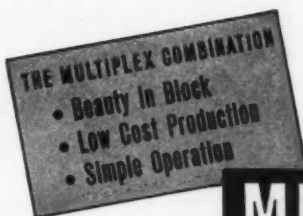
The Multiplex Flue-Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings. A great money-maker for wide-awake producers. Simple and easy to operate.

ders are being filled in order of acceptance and this policy of "first come, first served" will be strictly adhered to throughout the emergency.

The high quality which means years of trouble-free service continues to be built into every piece of Multiplex machinery.

You'll find it pays to wait for your Multiplex. Your order placed now hastens the day of delivery to you.

Write for Catalogue
43 Years of Service



MULTIPLEX CONCRETE
MACHINERY
ELMORE, OHIO

Super VIBRATOR

CONCRETE BLOCK MACHINE

GEORGE
SUPER

V

● SUPER VIBRATION is the GEORGE SUPER V answer to the problem of **QUALITY** production of masonry units. It guarantees uniform, built-to-last blocks.

● SUPER VIBRATION gives a dense outer surface to the finished **WATER PROOF** block because it allows use of a wetter mix.

● GEORGE SUPER V concrete block machines will operate at a rate of 250 to 300 blocks per hour. Designed simplicity assures **LOW COST PRODUCTION**.

● Every GEORGE SUPER VIBRATOR block machine and every piece of accessory GEORGE SUPER V machinery is mechanically **RIGHT**.

● GEORGE SUPER V machinery is ruggedly and honestly built to provide efficiency, economy and dependability.

● GEORGE SUPER V products are built to meet all requirements of block manufacturers and sell at prices that make them money savers.

CAPACITY
300
BLOCKS
PER HOUR



F. C. GEORGE MACHINE CO.

615 BROOKHAVEN DRIVE
ORLANDO, FLORIDA



JOLTCRETE No. 9

• STEARNS Improved JOLTCRETE No. 9 makes from 9 to 11 perfect 8x8x16-in. block per minute . . . Makes all shapes and sizes of units with all types of aggregates . . . New Automatic Carriage Drive delivers block to Offbearer. Power Offbearer delivers block to racks. Both eliminate hand labor.

Why STEARNS Leads

• *Stearns always has been, always will be the trail-blazer, the pioneer earnestly seeking new, improved and lower cost methods of manufacturing better concrete masonry units. JOLTCRETE, which was a long, revolutionary step into the future came as a direct result of this policy.*

• *Stearns Leads*—more Stearns machines are in successful operation than those of any other manufacturer.

• *Why?* Because Stearns is progressive, practical—and has kept faith with the Industry.

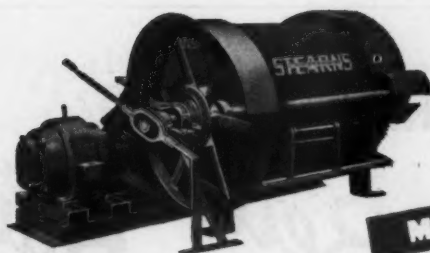
• *The Stearns machines illustrated on this page will answer any post-war production problem you may have. Stearns distributors will continue to give you the benefit of their mature experience. Make use of them.*

Literature describing any or all of the machines illustrated on this page will be sent upon request.

STEARNS

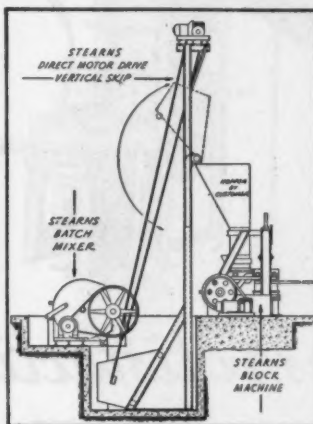
GENE OLSEN, PRESIDENT

Pioneers in the design and manufacture of modern machinery for producing concrete masonry units.



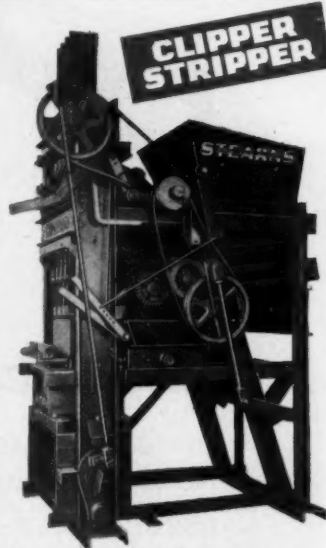
MIXER

• STEARNS MIXERS are equipped with wear-resisting, removeable, quickly shifted liner bars and adjustable "Sterloy" mixing blades . . . Discharge door opens easily, locks tight, won't leak . . . Conveniently located door control and handy bag shelf . . . Bearings are self-aligning, anti-friction, dust proof . . . Drums are of steel plate welded to heavy heads . . . Supplied in 12, 18, 28, 42 and 50 cu. ft. capacities with pulley, V-belt or Gear-head motor drive.



SKIP LOADERS

• STEARNS SKIP LOADERS cut costs of elevating mixed concrete into feeding hoppers and charging dry materials into elevated bins . . . Push button control stops bucket in any position—stops automatically when dumped . . . Easily installed as a separate unit and with any type of mixer. Independent motor or mixer driven types supplied.



CLIPPER STRIPPER

• STEARNS CLIPPER STRIPPERS produce more block per man per day than other machines with comparable power operations . . . Made in four models with power tampers ranging from manual feeding and stripping to all-power . . . Interchangeable parts permit progressive addition of power equipment without sacrifice.

YARDHOIST

• STEARNS-Warren YARDHOIST easily handles 800 block per hour . . . Outstanding features (covered by patents pending) are 1) its ability to pick up block from racks without top clearance and 2) its ability to rotate through a vertical plane permitting operator to stack block in any desired position without leaving spaces between them . . . Quickly spotted in any part of the yard . . . Compressed air supplied by hose from plant or gasoline driven Compressor mounted on Yardhoist base.



GRAVELEY

Better Built

CONCRETE BLOCK MACHINERY



BUILT TO
Last!

Guarantees Satisfaction!

CONCRETE FACTS

Precision machining and sturdy construction of Graveley **BETTER BUILT** concrete block machines guarantee economic, rapid production of top quality, uniform products with an absolute minimum of operator's attention or maintenance.

FOR

Better Built

CONCRETE BLOCK MACHINERY

Write, Wire or Phone

BOB GRAVELEY
519 BROOKHAVEN DRIVE
ORLANDO, FLORIDA

GRAVELEY *Better Built* MACHINERY



\$30 to \$50 Daily Profit

A very profitable market awaits you in concrete brick. The **LITTLE DAVE BRICK-MAKER** enables you to tap this market with the absolute minimum in machine investment.

- Perfect brick—every brick perfectly square, sharp cornered with attractively textured face.
- Adaptable—can make units of 7 different sizes.
- Daily output—4,500 bricks.
- Favorable deliveries.

R. S. REED CO. 325 E. Michigan Three Rivers, Mich.

California Registration

(Continued from page 130)

E. B. Hanson and John W. Davis, Davis & Hanson, San Carlos.
J. E. Jellick, Pacific Portland Cement Co., San Francisco.
Harry Brown, Brownlite Products, Modesto.
E. P. Ripley, General Concrete Products, Inc., Van Nuys.
Henry Bosch, Cielite Bldg. Materials, Oakdale.
J. M. Lewis, L & M Supply Co., Rodeo.
Lt. E. T. McGowan, Marysville.
J. J. O'Flynn, L. L. Shuppy, Geo. T. Redfield and D. D. De Lain, Crescent Engineering & Block Co., Richmond.
T. O. Smith, T. O. Smith Construction, Oakland.
M. R. Bickham, Oakland.
John W. Pierson and Mrs. John W. Pierson, Stockton Concrete Products, Inc., Stockton.
W. M. Gray, Haydite Products Co., San Francisco.
E. S. Morse, Morse Concrete Products Co., Monterey.
Marshall Gibson and Orville E. Jack, Permanente Cement Co., Oakland.
Arnold Maaha, Eureka Concrete Building Products, Eureka.
Hugh T. Harrison and Walter E. Gay, Pumice Industries, Fresno.
J. H. Lloyd, W. F. Fricke, San Rafael.
W. E. Schlunk, Pacific Pumice Materials Co., Fresno.
Russell F. Kretz, Concrete Pipe & Construction Co., Gilroy.
Harry C. Scholten, Gilroy.
H. O. Hiltaker, Hiltaker Concrete Pipe Co., Eureka.
James K. Beatty and Jack Jausse, Permanente Cement Co., Oakland.
Clarence Kline, Kline Concrete Block Co., Emeryville.
W. R. Dear, Acme Concrete Products, Oakland.
R. C. Padley, Noble Co., Oakland.
Fred Royce, Ken Royce Co., San Francisco.
Lee C. Keene, Keene Concrete Block Co., Mountain View.
L. D. Wlechers, Peninsula Concrete Products Co., San Mateo.
K. D. Lemon, Raggio Concrete Pipe Co., San Jose.
Samuel P. Laverty, Santa Cruz Portland Cement Co., San Jose.
Jas. J. Fennell, California Concrete Products Co., San Jose.
Albert F. Brown, Salinas Tile Co., Salinas.
Rolfe A. Folsom, Interlocking Block Co., San Jose.
John M. Arriola, Riverbank.
B. Jaffe, Cement Block, South Palo Alto.
Anthony Polizzi, Artificial Stone Work, San Jose.
Bozo Stankovich, Yosemite Portland Cement, San Francisco.
H. W. Chutter, Jourdan Concrete Pipe Co., Fresno.
King-Nickels, Concrete Products Co., Oakland.
R. D. Rader, Portland Cement Information Bureau, San Francisco.
Bailey Justice and Jack Brem, J. W. Brem Co., Berkeley and San Diego.
Oscar Holm, Holm's Block Yard, South Palo Alto.
R. E. McDonald, Monterey Sand Co., Monterey.
H. A. Best, Best Concrete Products, Oakland.
Paul D. Roettinger, Pumice & Rock Products Co., Stockton.
R. Monroe, Mortarless Blocks, Contra Costa County.

Building Block Plant

VETERANS BUILDING BLOCK CO., Winston-Salem, N. C., recently organized, is putting up a new building, 55- x 104-ft., with four curing rooms 6- x 7- x 53-ft. A Besser Super Vibrapac machine will be installed.

ANNOUNCING

the New **KENT VIBRA TAMP**

Push Button Control

Drop pallet and push button

Material is vibrated into mold box and with heavy eight bar tamper a denser block is assured.

Cams complete cycle delivering block on automatic take-off at the rate of five blocks per minute.

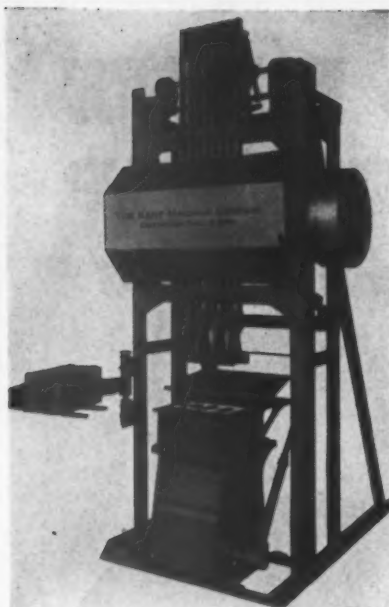


This machine has many new features.

Write for further details.

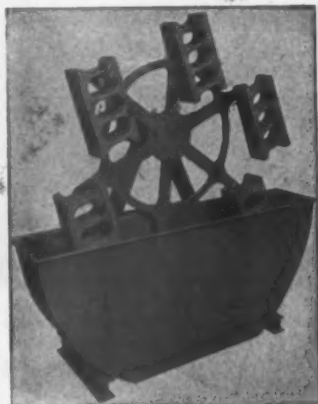
The Kent Machine Company

CUYAHOGA FALLS, OHIO



KENT tamper & stripper

with off-bearer attached to frame. This is an efficient, longer lasting machine. Produces strong, beautiful block.



THE KENT DUNKER Pallet Cleaner and Oiler

This patented Dunker keeps pallets in prime condition at all times. Just hang the pallets on the pins and as they are taken off for use the spider rotates by gravity passing the pallets through the tank. You can use discarded crank case oil from your trucks in the Dunker tank.

The KENT MACHINE CO.

Cuyahoga Falls, Ohio

Plant Design

(Continued from page 129)

vision for future doubling of capacity, has a travelling batch-type mixer on an overhead rail. The mixer attendant will ride along with the mixer. many designs provide for future expansion in their layout.

Tie-In Ready Mix and Block

Having decided to invest in bulk cement machinery and handling methods, it is apparent that a number of large manufacturers of concrete masonry units plan to enter the ready-mixed concrete industry. Quite a few plants are providing for transit mix concrete batching in their postwar designs and some have future provisions for that purpose. Some of the drawings reproduced herewith show evidence of that trend.

Further study of the plans reveals the thinking in regard to the relation of location of curing kilns to block machinery, which is an important consideration in eliminating lost motion. Locker rooms, wash rooms, foremen's rooms, welding rooms—conveniences woefully lacking in this industry—are being incorporated into many new plant layouts.

Curing Rooms

According to some sources, and our own observations in the field, there is a tendency on the part of some producers of concrete masonry to have curing rooms for low pressure steaming open only at the plant end, principally for the purpose of heat conservation.

Offbearing devices for green block and the use of other labor-saving devices such as fork-type power lift trucks for handling cured units, and for cubing units in the yard for re-handling, will be common items of equipment in these postwar plants, to speed up operations, cut costs and save wear and tear on plant labor. There obviously will be more widespread utilization of undercover storage.

One illustration shown herewith is of a modern cinder-crushing and handling plant that is typical of many to be built, using vibratory screens and other types of machinery that have been proved efficient in the rock products industry. It will be noticed that a 4000 cu. yd. cinder curing pile is included in the flow sheet. As this is written, considerable research is going forward on the quality of cinders and the findings, no doubt, will have influence in plant procedure. However, this article has as its purpose a summary of the thinking along the lines of plant layout and design only.

EDITOR'S NOTE: We wish to acknowledge with thanks the cooperation of C. S. Johnson Co., the Butler Bin Co., Stearns Manufacturing Co., Besser Manufacturing Co., and many others for contributing information and illustrations for this article.

PARAFFINE "WAX" OIL

A HIGH PARAFFINE CONTENT OIL

For treating forms for concrete wood pallets for concrete unit manufacture and for water-proofing concrete units.

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Providing a heavy wax impregnation, assuring a smooth finish to the completed units and monolithic castings. Longer useable life for your lumber.

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Paraffine Wax Oil may also be later heavily applied direct to cast block or poured wall as an effective water repellant treatment.

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Available in any quantities. Shipped in convenient open top drums. Lower in cost than ordinary paraffine oils.

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"ANCHOR"

Complete

EQUIPMENT AND ENGINEERING SERVICE

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc. Repair parts for Anchor, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mch., Co.

1191 Fairview Ave., Columbus 8, Ohio

The APPLEY "LITTLE GIANT"

A SUPERIOR VIBRATOR

for only \$995⁰⁰ F.O.B. FACTORY

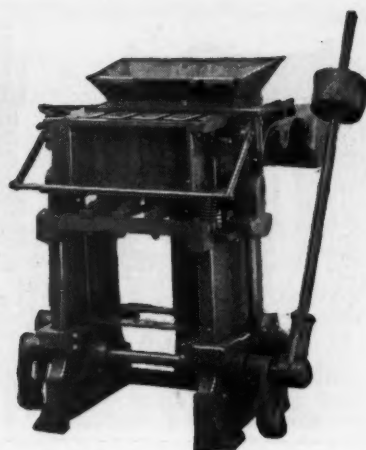
So economical is this machine in operation . . . of such uniform high quality is the block made on it, that manufacturer after manufacturer who started out with one unit is adding two, three and four more.

The Little Giant is a low-priced vibrating machine that moulds perfectly cut blocks of maximum strength and density. Vibration is applied to the mould box while cores remain stationary, thus producing a superior block with square true corners and a smooth face.

This is the block machine you want to investigate. Write today for descriptive literature.

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Simply designed and durably built, the Little Giant makes 100 8"x 8"x 16" units per hour. Interchangeable cores and partition plates permit manufacture of 6 standard types of block.

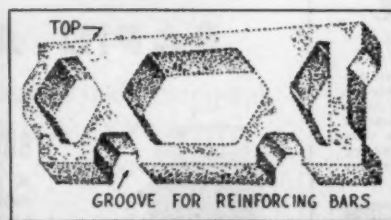
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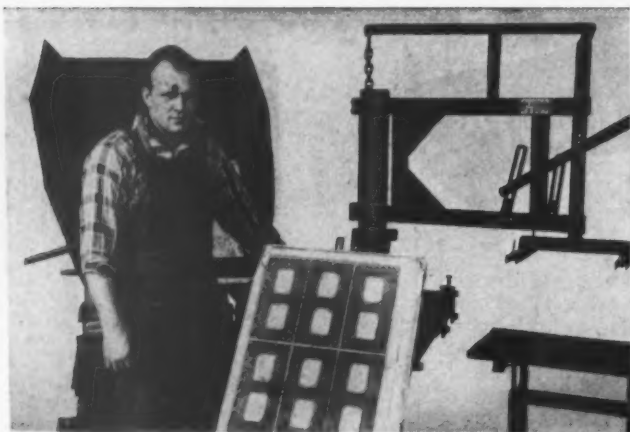
Your present block making machinery plus very little additional equipment will put you in this new, profitable, large order line of precast roof and flooring.

Assembly line methods for making these precast planks keep costs down and increase your profits.



Come to Milwaukee while you are at the N. C. M. A. Convention and see our modern plant in operation or write for our licensing plan and for additional information about the process.

DOX-BLOX Cities Fuel & Supply Co.
6637 West National Avenue
Milwaukee, Wisconsin



WATCH FOR THE NEW MODULAR TYPE Pallet

● TO BE ANNOUNCED AT THE
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These new pallets will allow blocks to be made to a length of 15 $\frac{1}{2}$ ". Thus, with a $\frac{3}{8}$ " mortar joint, these blocks will lay up to 16" centers.

Modular Type pallets will be formed of cold pressed steel, with mortar groove and strength-imparting ridges in the cross ribs. This adds still another style and size to the large Commercial line of pallets for the concrete block industry.

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The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

Quinn Heavy Duty Pipe Forms

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe at lowest cost.

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Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

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**Peak performance
—low costs with**

Flam Challenger Vibrating Block Machine

A Challenger Vibrating Machine requires only a small investment yet it gives the performance of expensive, complicated machinery. Check these 10 points.

1. Inexpensive wood pallets. 2. One size pallets for ALL size units. 3. Molds can be changed quickly. 4. Small power unit vibrates mold. 5. Low initial investment. 6. Repairs, upkeep low. 7. Skilled labor not required. 8. Makes all standard and special units. 9. Makes Sills, Lintels, Fenceposts, Pier Blocks or any shape unit on the same Vibrator table used for making standard units. 10. Units denser—absorption less.

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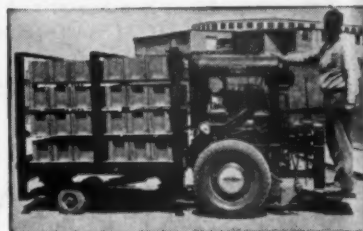
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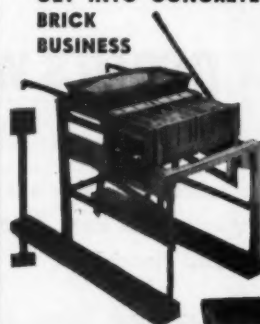


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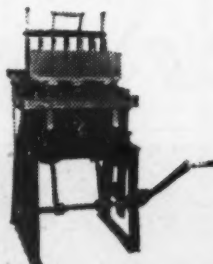
RAPID ACTION!

Concrete Brick and Block Machine

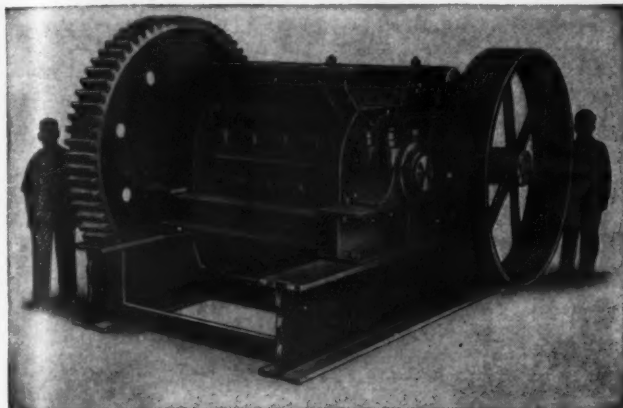
A complete plant in itself. Makes a perfect brick and block with less investment in equipment.

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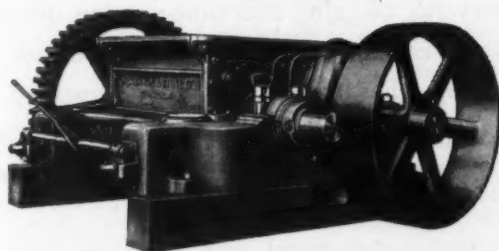


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THE ROCKMASTER AUTOMATIC STEELSTRUT TOGGLE PRIMARY CRUSHER— REMARKABLE POWER AT LOW COST

1. All Steel Constructed 2. Cast Steel Gears 3. Automatic Steelstrut Toggle for Tramp Iron Protection 4. Chilled Alloy Iron or Steel, Interchangeable and Reversible Crushing Plate Liners 5. Hard Surfaced Steel Segment Rolls Easily Replaced Without Dismantling Machine 6. Takes Choke Feed. 7. Dry, Muddy, Wet or Frozen Material Never Packs 8. Lowest Proportion of Flats and Dust Produced 9. Slowest Speed of Moving Crushing Elements 10. Greatest Crushing Range With Opening Easily Adjustable 11. Takes Large Primary Sizes 12. Low First Cost—Low Power Cost—Minimum Repair and Upkeep Costs.



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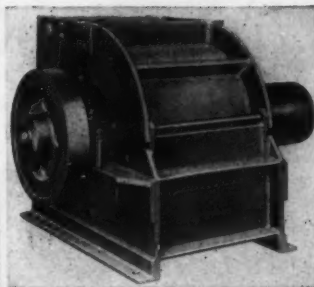
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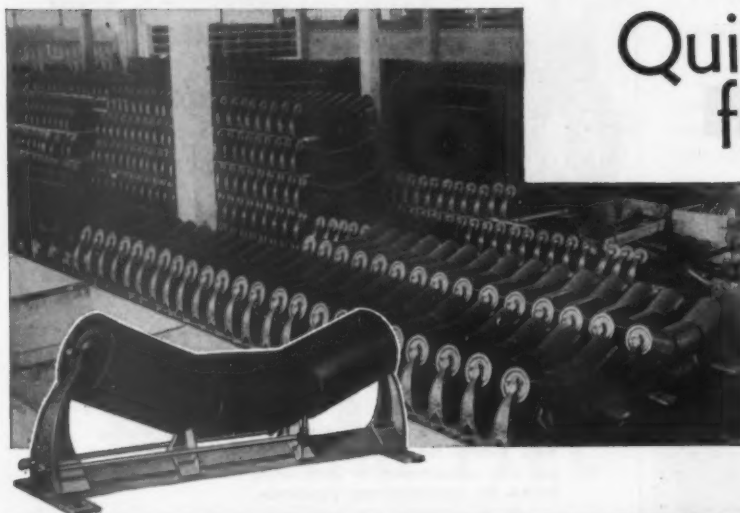
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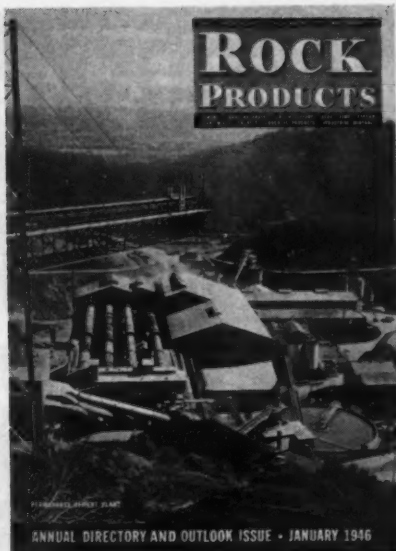
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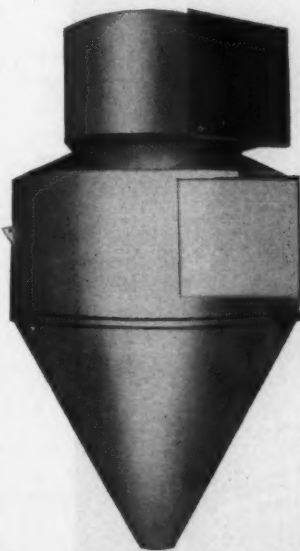
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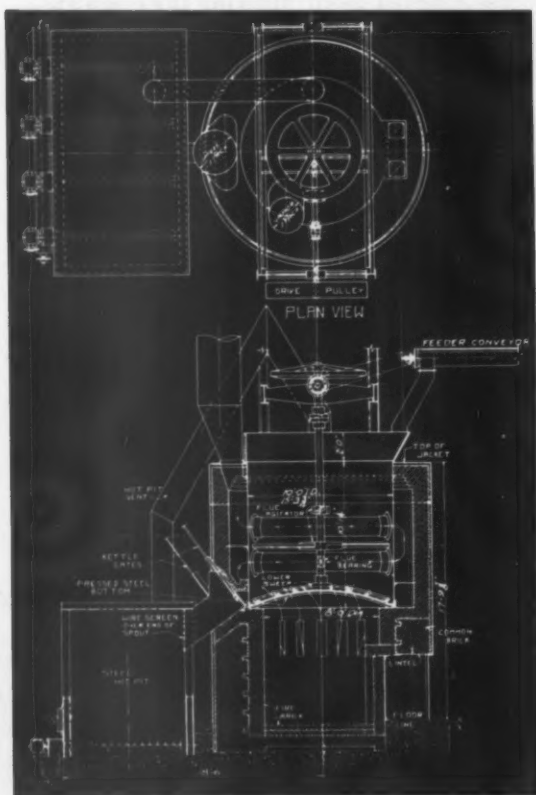


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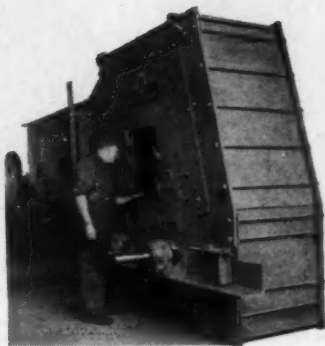
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2 CRUSHERS IN 1

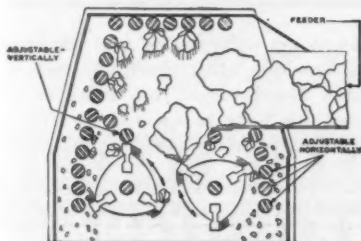
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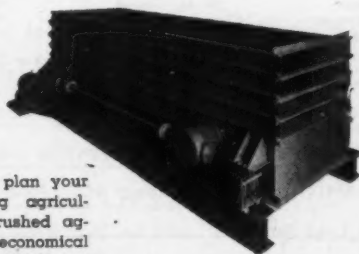


HOW IT WORKS



Impacting action of the two gigantic impellers, operating clockwise and counterclockwise, strikes the stone in mid-air as it enters the crusher. Material is thrown upward against the grate bars and rebounds to the impellers. This process continues until the stone is reduced to the required size when it passes around the impellers and out through the discharge openings. Impellers travel at adjustable speeds of 300 to 900 rpm. Size of finished product is easily and quickly controlled. Manganese steel impeller bars have four striking faces and are made to be reversed when worn.

N. H. Horizontal Vibrating Screens designed for the most difficult screening jobs. Have many superior features.



Let N. H. Engineers plan your set-up for producing agricultural limestone or crushed aggregates. The most economical way is with the Model 3030 and other N. H. equipment.

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HI-DUMP,
2, 3, 4 1/2 yd. sizes.
LOW CHARGE type
2 to 8 yd. sizes.



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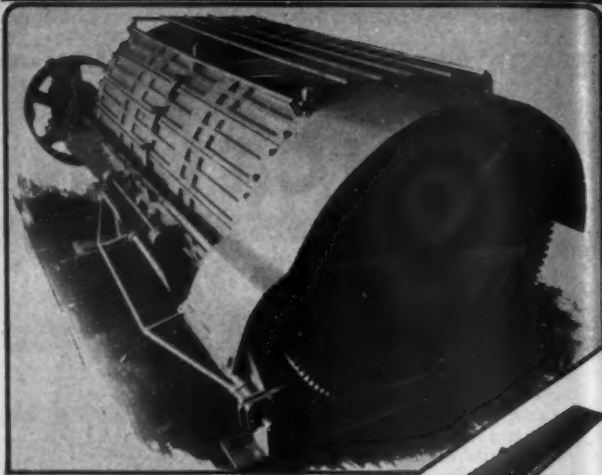
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PATENTED INTERCHANGEABLE STAVES are concave shaped and bolt to the drum ends to form the mixing drum. When any part of the drum becomes worn, it is easy to interchange one stave with another and proceed with the mixing. No outside drum or interliners required.

FAST, THOROUGH MIXING - Specially designed spiral blades mix quickly and thoroughly with low power demand. **LOW MAINTENANCE COSTS** - Each part and assembly are built for hardest use. Dust-proof, permanently sealed, self-aligning ball bearings throughout. Available in 9, 18, 28 and 42 cu. ft. capacities. Write for illustrative folder and prices.

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... Batchers
... Belting, Conveyor,
Elevator, Power
Transmission
... Bolting, V-Type
... Belt Repair Equipment
... Bin Level Indicators
... Bins and Batching
Equipment
... Blasting Supplies
... Block Machines,
Concrete Building
... Bodies, Trailer
... Brick Machines and
Molds
... Buckets
... Bulldozers
... Cars, Industrial

... Classifiers
... Clutches
... Coal Pulverizing
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... Concentrating Tables
... Concrete Mixers
... Concrete Mixing
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... Concrete Specialty
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... Crushers
... Derricks
... Dewatering Equip-
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... Draglines
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... Drilling Accessories
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... Hard Surfacing Ma-
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... Hoists
... Hoppers
... Kilns: Rotary, Shaft,
Vertical

... Locomotives
... Lubricants
... Mills
... Pulverizers
... Pumps
... Scales
... Screen Cloth
... Screens
... Scrubbers: Crushed
Stone, Gravel
... Shovels, Power

... Speed Reducers
... Tanks, Storage
... Tractors
... Trucks, Industrial
... Trucks, Mixer Body
... Trucks, Motor
... Vibrators
... Welding & Cutting
Equipment
... Winches
... Wire Rope

If equipment you are in market for is not listed above, write it in the space below.

Send to:

**Research Service Department
ROCK PRODUCTS**

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City..... State.....

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Width of Spread
16½ feet

All-Steel
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Model K, Wide Chain Type Lime Spreader
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ONE MAN, with an S-A Car Puller, can pull up to six loaded cars and spot them quickly. No waiting for a switch engine... no man hours lost in taking men from other work. The powerful capstan will also lift or pull heavy loads—at a speed of 45 feet per minute.

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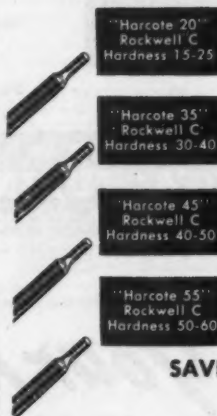
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P&H now makes hard surfacing a simpler, easier job — easier in the selection of the correct electrode... easier to get the desired as-welded hardness.

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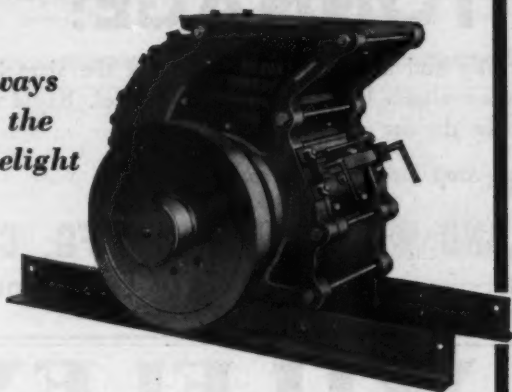


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It is for a number of reasons that Gilson Limestone Pulverizers produce specification-true Agricultural Limestone at such low costs. Gilsons are large capacity units. Power requirements are low. They pulverize the stone quickly. And all parts subject to wear are quickly accessible. You should get the details about these and other advantages of Gilson's. Write today for our catalog.

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The features embodied in the new model GAYCO Centrifugal Air Separator make them a leading means of increasing the capacity and efficiency of all types of grinding mills. They have quick, positive adjustment. When once adjusted they are not affected by variation in speed or rate of feed.

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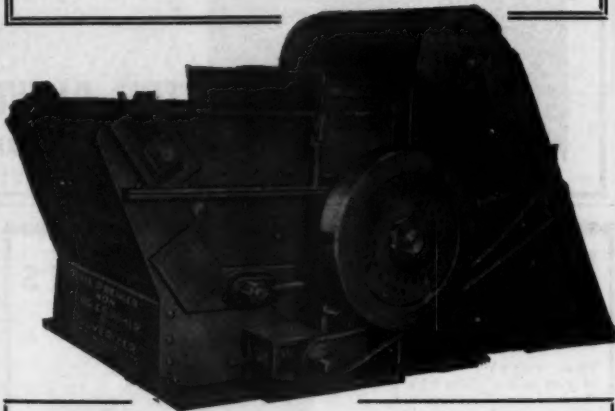
* Manufacturers also of "Reliance" Crushers, Screens, Elevators, Conveyors, Bin Gates, Grizzlies. Complete crushing, screening, and washing plants for crushed stone, sand and gravel.

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NOTE THESE TYPICAL TOUGH JOBS LICKED BY DIXIES

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The Dixie Non-Clog Hammermill is the only crusher with a moving breaker plate. Provides positive mechanical feed. No manual pushing of material needed. Even the most plastic, wet, clayey material will not slow production or clog hammers. This feature alone has saved the cost of 10 men in one company!

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Please send free booklet on Dixie Non-Clog Hammermills. We want to crush
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HIGH TONNAGE!

Wire screens powerfully and accurately built to resist the slam bang service of Vibrators are available in all openings and grades. Rapid wear is effectively reduced by the use of stalwart steels.

Stop losses! Write today.

THE CLEVELAND WIRE CLOTH & MFG. CO.

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Every "DAY" brings more Profits

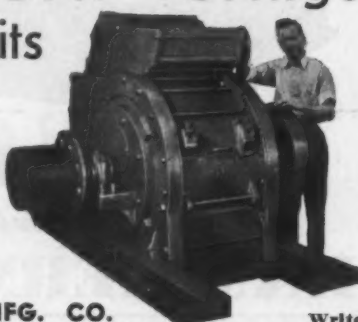
The "DAY" Swing Hammer Roller Bearing Pulverizer gives exceptionally wide crushing range combined with low operating cost. Efficient producer of road stone and ag-stone.

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Continuous operation without attention for long periods. Stuffing box, stuffing gland water ALL eliminated. Close clearances maintained by easy slipper seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. Write for Complete Catalog.

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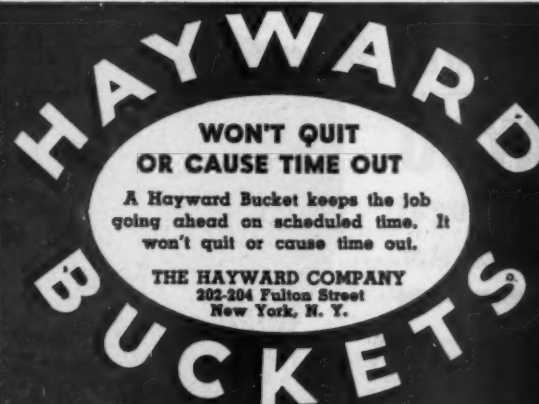
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A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

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—on **STEELGRIP** Steel Lacing that is applied with a hammer. 11 sizes—convenient boxes or long lengths for wide belts. Have 2-piece hinged rocker pins.

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CARRIES two pay-loads in one.
SAVES in first cost (up to 40%), on insurance (up to 50%), fuel costs (up to 20%), tires (50% to 100% longer life), road time (up to 20%), breakage of fragile loads, license fees, dead weight, maintenance costs.
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10"x16" Traylor type H Jaw Crusher
12"x22" Acme type D Jaw Crusher
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6"x4" A-C Gyrotory 3-D Reduction Crusher
11" Traylor Bulldog Gyrotory Crusher
16"x42" A-C type B Double Roll Crusher
20"x16" Stedman Heavy Duty Roll Ring Crusher
No. 2 Williams Semi-Vulcanite Hammermill
No. 0 Sturtevant Mill Rotary Fine Crusher
Type 33 Furnace Engr. Simplex Coal Pulverizer
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Vibrating and Revolving Screens

4'x10' 2-deck Robins Gyrex Vibrating Screen
4'x9' 1-deck Leahy Double Vibrating Screen
4'x7 1/2' 1-deck Robins Perflex Shaking Screen
3'x5', 4'x5' and 4'x7' 1-deck Tyler Hummers
15-cycle Tyler Generators for Hammer Screens
Revolving Screens: 3'x11', 4'x22', 5'x18'
S-A Conical Screens: 25" and 44" diam., 54" long

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20" Dings Magnetic Belt Conveyors, 5" c.
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24", 30" and 36" Belt Conveyors, plain bearings
Conveyor Pulleys, drives and takeups to 36" wide
20"x60" Slat Conveyor, on roller chain
16"x42" Scraper Conveyor, Steel Frame Trough
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Merrick Weightometer for Belt Conveyor

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10"x50' Belt Bucket Elevator, enclosed
12"x50' Chain Bucket Elevator, enclosed
6" to 20" Enclosed and Open Bucket Elevators
10"x48' Belt Bucket Elevator, continuous
14"x50' Chain Bucket Elevator, continuous
6"x28' Chain Bucket Elevator, open type
10", 16" and 18" C-type Galv. Elevator Buckets

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Rehandling Clamshell Buckets 1, 1 1/2 and 2-yds.
107" and 529" Chicago Belted Air Compressors
Single and Double Drum Electric Hoists
36"-g. Gasoline Locomotives, 4 and 8 tons
24" and 36"-g. Side and End Dump Cars
Gear Reducers, Motors, Elec. Car-pulleys, Pumps
1500' Steel Bushed A-121 Eng. Chain

G. A. UNVERZAGT & SONS

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140 CONCRETE VIBRATORS

Jackson, Mall, Viber, Syntron; 110 and 220 volts. Half price for one, less for quantity. Jackhammer drills; new drill steel and jackbits; paving breakers; DA-35 Drifter drills; Cranes, Shovels, air compressors, concrete mixers. 30 I-Beams 36" deep, 40' long. 2 1/2 c pound Tenn. point. Send me a list of your needs. I attend Govt. sales throughout Southeast.

WANT TO BUY: Large hammer mill and shaker screens.

SAM SMITH, Machinery
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FOR SALE

GRINDING MILL, Fuller-Lehigh 83", complete with blowers, collector, and piping.
HYDRATOR, Clyde No. 3, 10 feet diameter.
37 Side Dump Cars, 1 1/2 yard, 24" gauge.
Box Car Loader with 5 HP motor, 220/1/60.

G. & W. H. CORSON, INC.
PLYMOUTH MEETING, PA.



LET HIM DO IT THE
HARD WAY—IM
PAYING HIM
TO WORK

An employer who buys "main strength and awkwardness" is a loser. The modern, profitable, way is to see that employees have the most suitable equipment to do the job the easy way. Get it from E.C.A.

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- 1—25 ton Industrial Bay City Locomotive Crane Type G No. 4639, steam powered, 45' boom.
- 1—25 ton Industrial Steam Locomotive Crane Ser. No. 2811, steam powered, oil fired, 40' boom.
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AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. 1,000 cu. ft.

CRUSHERS

- 1—Acme style D No. 9 1/2 jaw crusher, with screen, elevator and gas engine. 12 to 18 ton per hr.
- 1—Good Roads crushing plant, crusher. 16x20"
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- 1—Acme jaw crusher, Ser. No. 1873, size 12x20"
- 1—No. 3 Champion jaw crusher, size 7 1/2x13"
- 1—United Iron Works, "Blake-type" jaw crusher, size 9 1/2x24"
- 1—Sawyer Massey jaw crusher, size 9x18"

DERRICKS

- 4—Steel guy derricks, 1—20 ton Insley 115' mast, 100' boom. 2—20 ton American steel guy derricks, 1—110' mast, 110' boom. 1—100' mast, 90' boom. 1—15 ton American steel derrick, 85' mast, 75' boom. 1—5 ton Terry Guy Derrick, 70' mast, 60' boom.
- 3—Stiff leg derricks.
- 1—62 1/2 ton Insley, 50' mast, 70' boom.
- 1—15 ton Clyde, 30' mast, 45' boom. 1—11 ton Fort Pitt, 38' mast, 70' boom. Also a number of wood stiff leg derricks, 1 to 5-ton cap.

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FOR SALE

2—315 cu. ft. 1000 lb. pres. Ingersoll-Rand. Models 315 and 315A portable Air Compressors with 105 HP Waukesha Oil Engines, complete with accessories.

SLIPRING MOTORS

QJA.	HP	MAKE	VOLTS	RPM	TYPE
1	700	G.E.	2200	393	MT-432
1	260	Burke	440	600	EMV-65
1	75	G.E.	220/440	1200	I
2	60	West.	220	1800	CW
1	50	West.	220/440	1120	HF
1	50	Chandeysson	220/440	1800	MT

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6428 Hamilton Ave. Pittsburgh, Pa.

FOR SALE—A GOOD TIME TO BUY

LOCOS—Diesel, 3 wht. 36" gauge, 14 ton.
2 Baldwin, 1000 H.P., 1.0 ton.
Steam 3 Davenport 30 ton 11x16.
CRUSHERS—Gyr. 9 Mc. 7 1/2—36" TY—10" AC.
Jaw—24x36, 42x48, 9x36.
Rolls—3 sets, 54x24.
DERRICKS—New steel 5 ton 50' B. stiff leg.
Crane type, 60' B. 5 ton steel.
Guyline—45 ton, 110' B.
LOCO—Crane Orion 35 ton—Marion 460.
SHOVELS—30 B 2 yd. steam—M125 Electric.
A. V. KONSBERG, 8 S. Dearborn St., Ch. 5290

HOISTS (Electric, Gas Steam)

- 85—Electric, ranging from 30 H.P. up to 125 H. P. consisting of triple-drum, double-drum and single drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Liddewood and National.
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- Steam ranging from 8 H.P. to 60 H.P., single, double and triple-drum; all standard makes.

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Column Drifters and Tripods

- 4—Model 17 Denver rock drills.
- 3—Sullivan high-speed drills, Model FG-3.
- 5—Ingersoll Rand type X71 drifters.
- 4—Gardner Denver drills with drifter mountings.

JACKHAMMERS

- 8—Jackhammers, consisting of Hardsco, Worthington and Cleveland, 45 lb. and 85 lb. class.
- 4—Ingersoll Rand Model BCR-430 jackhammers, 47 1/2 lb.
- 1—No. 3 Hardsco, 50 lb.

WAGON DRILLS

- 2—Gardner Denver derrick drills with Model 21 Gardner Denver drill; will drill 30 ft.
- 1—Ingersoll Rand drill, size D, with utility air hoist and Ingersoll Rand X71 drill.
- 1—Ingersoll Rand Model FM-2 drill, with Ingersoll Rand air hoist, size X71, mounted on pneumatic tires; will handle 20 ft. steels.
- 2—Ingersoll Rand Model FM-2, with air hoist and X71 drill, mounted on 4 steel wheels; will handle 20 ft. steels.
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WE ALSO HAVE A LARGE STOCK OF DRILL STEEL WITH MISCELLANEOUS TIMKEN BITS.

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We have a large stock of centrifugal pumps, gas and elect. powered from 1 1/2" to 10". Also Dredging and vertical pumps.

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CORPORATION**
of **AMERICA.**

DEMPESTER DUMPSTERS

Model 150-B

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Model 150-A—CH-150 & 200

Immediate delivery of above hoists and buckets in good used condition.

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Located at Iowa Falls, Iowa, all in usable condition, we offer the following for sale:

- 1—336 Cedar Rapids Jaw Crusher.....\$500.00
- 1—16x16 Cedar Rapids Roll Crusher..... 600.00
- 1—8-T Pennsylvania Hammermill—36x48 with spare hammer shanks, renewable tips and cones.....\$1000.00
- 1—938 Universal Jaw Crusher—1 extra curved jaw.....\$1500.00
- 1—Kelley Electric Power Float with disc and brush.....\$360.00

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FOR
**IMMEDIATE
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OF
RUBBER PRODUCTS

Conveyor Belting...Transmission
Belting...Elevator Belting...Fire,
Water, Air, Steam, Suction or
Welding Hose, etc.

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CARLYLE
THE
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**CARLYLE RUBBER PRODUCTS ARE
NEW, GUARANTEED & LOW PRICED**

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers	Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"	20"	5	1/8"	1/32"
42"	5	1/8"	1/16"	20"	4	1/8"	1/32"
36"	6	1/8"	1/16"	18"	4	1/8"	1/32"
30"	6	1/8"	1/16"	16"	4	1/8"	1/32"
30"	5	1/8"	1/16"	14"	4	1/16"	1/32"
24"	5	1/8"	1/32"	12"	4	1/16"	1/32"
24"	4	1/8"	1/32"				

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes "D" WIDTH All Sizes
"B" WIDTH All Sizes "E" WIDTH All Sizes
"C" WIDTH All Sizes Sold in Matched Sets
Inquire For Prices - Mention Size and Lengths

PROTECT THAT PLANT
FIRE HOSE

**APPROVED SPECIFICATION HOSE
EACH LENGTH WITH COUPLINGS ATTACHED**

Size	Length	Per Length
2 1/2"	50 feet	\$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1 1/2"	50 "	20.00
	25 "	11.00

* Specify Thread On Couplings

CARLYLE RUBBER CO., Inc.

62-66 PARK PLACE

NEW YORK, N. Y.

FOR SALE

1-9 cubic foot Ideal Concrete Mixer with-
out motor.
1-14 cubic foot Ideal Concrete Mixer
without motor for Concrete Block Plant.

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18x36 Universal roller bearing jaw
crusher, very good condition.

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PEORIA, ILLINOIS

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1-80 ton Baldwin 0-6-0 separate tender switcher,
built 1925. A.S.M.E. boiler, piston valves,
Walschaerts valve gear, overhauled and up to
date on all I.C.C. requirements.

1-79 ton American 0-6-0 separate tender switcher,
built 1920, superheated boiler, piston valves,
Walschaerts valve gear, rebuilt and up to date
on all I.C.C. requirements.

1-25 ton American Diesel Locomotive Crane, built
1942.

1-20 ton Whitcomb diesel-Mechanical 36" gauge
locomotive, four wheel type.

2-20 ton gasoline locomotives, 4 wheel type, built
1941 and 1942, overhauled, standard gauge.

1-American Eagle track crane, gasoline drive 7 1/2
ton capacity.

Birmingham Rail & Locomotive Co.
BIRMINGHAM 1, ALABAMA

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In Wisconsin

Thew-Lorain 75-A Combination
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Thew-Lorain 75-A Shovel.

P&H "400" Combination Shovel
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FOR SALE

Gravel Plant Machinery

1 1/2 cu. yd. Sauerman Slackline Cableway, 800 ft.
span.
120 H.P. Sauerman Electric 3 Speed Hovel. A.C.
Motor, line speeds 100, 300, 900 ft. per minute.
100 ft. Sauerman Steel Mast, complete with mast
bands and roller bearing tension and load line
blocks.

1 Real 3/4" x 1000 ft. 6x19 Plow Steel Cable, new.
2 Direct connected Electric DeLaval water pumps,
25 and 50 H.P.
1-3'x8' 3-deck Niagara Vibrating Screen. Elec-
tric Motor.

6-Blaw Knox Steel Bins.
2-Tolamith Sand Settling Tanks; complete.
3 Story Structural Steel Screening and washing
structure over bins-bolted.

For sale as a whole-reasonable price

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712 West 13th Street Indianapolis 2, Indiana

FOR SALE

MINE HOIST-Ottumwa Iron Works, factory
rebuilt and never used. 33 inch double cage
with 100 H.P. variable speed motor including
switch board and controls. Rotary oil cooling
pump direct connected to 5 H.P. motor and all
incidental-\$3000.00.

HAYES QUARRIES

338 Railway Exchange Bldg. Kansas City 6, Mo.

FOR SALE

Approximately 6,000 12x16
steel cored pallets.

**CONCRETE & CINDER BLOCKS
PRODUCTS CO.**

10 Buell Rd. Rochester 11, N. Y.
Genesee 2121

FOR SALE

INDIANA LIMESTONE COMPANY, Inc.

BEDFORD, IND.

Crusher Plant—Dickinson Mill

- 544—Centers 24", 6 Ply Rubber Belt Conveyor, wood frame, 30" x 26" tall pulley with take ups. No Belt. Manufactured by Stephenson-Adamson Mfg. Company, Aurora, Ill.
- 1—Size 18" x 30" Belt Drive, Geared Stone Crusher. Ser. No. 633. Mfg. by Pennsylvania Crusher Co.
- 1—92' Centers, 30" Steel Feeder Conveyor. Manufactured by Stephens-Adamson Mfg. Co., Aurora, Ill.
- 1—36" x 42" x 42"—1/4" Steel End with Hopper Bottom.
- 1—62'0" Centers Bucket Elevator, 7" Channel Frame, 24" Rubber Belt with 24" x 15" x 10" Steel Buckets, 24" centers. Manufactured by Stephens-Adamson Mfg. Co., Aurora, Ill.
- 1—60" x 8" Hummer Shaker Screen, Type 39. Manufactured by W. S. Tyler, Cleveland, Ohio.
- 1—Air Bag Filter with 3—36" x 9" Receivers. Manufactured by The Northern Blower Company.
- 1—No. 45 Clorage Type SP Steel Plate Drive Exhauster, Top Vertical Discharge. Ser. No. 12784. Manufactured by Clorage Pan Company, Kalamazoo, Michigan.
- 1—30' Centers Bucket Elevator, 7" Channel Frame, 24" Rubber Belt with 24" x 15" x 10" Steel Buckets, 24" Centers. Manufactured by Stephens-Adamson Mfg. Co., Aurora, Ill.
- 1—Size SX4 Pennsylvania Stone Crusher, Ser. No. 743. Manufactured by Pennsylvania Crusher Company, Philadelphia, Pa.

FOR SALE

Steel Storage Tanks

6,000 — 8,000 — 10,000

Gallon Capacity

Reconditioned, Tested
and Painted

THE PURDY COMPANY

122 S. Michigan Avenue
Chicago 3, Illinois

CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (like new). 30" Superior McCully Gates Nos. 12, 10, 9, 8, 7 1/2, 6, 5, 4, 3, 2, 1 (75 avail.). Tolmuth Nos. 4, 5, 6, 8C, 9 & 10. Also many Austins, Kennedys and Traylor's, many sizes.

JAW TYPE: Traylor 60x24, 48x20, 42x18, 36x12. Superior 54x24 & 34x24. Buchanan 36x24. Farrel 36x24, 30x20, 24x20, 18x16, 12x12. Good Roads 1630. Ames 24x10. Misc. 72x12, 54x10, 36x20, 24x24, 12x24, 12x20, 12x16.

REDUC. TYPE: Kennedy Nos. 35, 37 & 40. Tolmuth 3-F & 40. Traylor 36" TS, 5", 10", 12". Super. McCully 6"x10". Newhouse 5, 7, & 10". Symons Cone & Disc 27, 3' to 4'.

ROLLS: Allis-C. 13 1/2"x18, 36"x18, 48"x18, 54"x24 & 72"x30. Fairmount 36x30 & Jeffrey 36x24 to 36x54 single roll. Cornish 36x24 & 42x18. Etc.

HAMMERMILLS: Williams No. 1, 2, 3, 4, 5, & 9. Jeffrey 36x18 & 36x24. Day Nos. 20 & 40. Etc.

MILLS: Kennedy Ball 4x6, 5x6 & 6x8. Marcy 5x6 & 10x12. Hardings 6"x3", 8"x3" & 6"x9". Misc. Tube Mills 6' & 6'x22". Sturtevant Ring Roll, Raymonds, Kent, Fuller Lehigh, Etc.

CRUSHING PLANTS: No. 55 Diamond No. 23 Pioneer 36x24, 10x20 Good Roads, 2x40 Austin-Western, 2x36 C.H.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cables, Cars, Compressors, Conveyors, Cranes, Dryer, Derrieks, Elevators, Excavators, Generators, Hoists, Kilns, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

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7229 Rogers Avenue CHICAGO (45)

RAILS NEW AND RELAYING

TRACK ACCESSORIES from 5 Warehouses

L. B. FOSTER COMPANY
PITTSBURGH • CHICAGO • NEW YORK

New — RAILS — Relaying ALL SECTIONS

Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locom, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

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RELAYING RAIL

TRACK ACCESSORIES

MIDWEST STEEL CORP.

GEN. OFF.: CHARLESTON 21, W. VA.
WAREHOUSES:
CHARLESTON, W. VA.
KNOXVILLE, TENN. • PORTSMOUTH, VA.

FOR SALE

LOCOMOTIVE CRANE

Type "KH" 45 ton Revolving, Electric on 4 Standard Railroad 4 wheeled trucks 100' Boom, fully enclosed Steel Cab. April Delivery. Located—Eastern Penna.

Write Box D-17, c/o ROCK PRODUCTS,
309 W. Jackson Blvd., Chicago 6, Illinois

FOR SALE

65 ft. Bucket Elevator, continuous type to handle 100 yards per hour, including 15 H.P. motor and 16" 8-ply rubber belt with 14" buckets. Rubber belt less than three months old.

Spartanburg Concrete Company
Spartanburg, S. Carolina

FOR SALE

Thomas Electric Two Drum Hoist. Line speeds 200 and 600 feet per minute. Has 90 H.P. Wagner Slip Ring Motor, 650 R.P.M., A.C. Current, 230 Volt, 3 Phase, 60 Cycles. Controller, variable speed non-reversing type. Operating levers banked in quadrant. Price \$2945.00 our plant.

INDIANA GRAYEL COMPANY

712 West 13th Street, Indianapolis 2, Indiana

BINS: 1—Bulk Cement Bin, twelve hundred (1200) bbl., 4 compartment, with four gates, with motor driven unloading screw and fully enclosed bucket elevator 65' cc, buckets 12" wide x 8" x 8", with or without two 12" screw conveyors 41' cc with 5 H.P., 230 volt, A.C. motors with speed reducers and weigh batcher with Fairbanks Morse springless Dial printograph scale. This bin could be used as combination aggregate and cement bin.

1—18" dia. cylindrical, 3 compartment, Cement Bin, without bucket elevator, but with 12" screw conveyor 41' cc, with 5 H.P. motor and speed reducer.

1—3 compartment, 30 ton Bin with or without 4 x 5, double deck, Vibrator Screen with motor and drive.

BOILER: Erie City 135 H.P., self-contained. Economic type, ASME code, 150 lbs. pressure, complete with all fittings.

CARS: 2—2 1/2 cu. yd., all steel, two way, side dump, Koppel Cars, standard gauge.

DRAG SCRAPER: Sauerman 1 yd. capacity with Crescent drag scraper bucket, 60 H.P. gasoline powered, 2 speed, Hoist, all cables, blocks, etc.

GYRATORY CRUSHERS: All sizes and types.

JAW CRUSHERS: 1—36 x 42, all steel, deep frame type, with or without 150 H.P., all ring, motor and controls. Also, sizes 12 x 24 to 48 x 60.

REDUCTION CRUSHERS: Traylor 4 ft., type TY, with motor, V-belt drive, etc., complete.

ROLL CRUSHERS: All sizes.

SOFT STONE ELIMINATOR: Stedman Disintegrator, 42" with or without 100 H.P. motor.

SWINGER: 1—Clyde 5 H.P., electric, powered with G.E., 5 H.P., 3 phase, 60 cycle, 440 volt, slip ring motor with drum controller.

VIBRATOR FEEDER: Jeffrey-Traylor 6' x 6', open pan deck, powered by four No. 5 heavy M-4 motors, including motor generator equipment for 440 volt, 3 phase, 60 cycle operations; capacity 1500 tons of earth and stone per hour, maximum size stone 3' cubes.

HAMMER MILL: Dixie Mogul 20 x 24, V-belt drive, with breaker plate and extra hammers.

PULVERIZERS: 3—Raymond, 5 roll, low side, Mills with No. 11 fan cyclone separator.

GAS HOIST: Clyde two drum with swinger, 50 H.P. Climax motor.

MINE HOISTS: 1—150 H.P., drum 72 x 72", 1—450 H.P., drum 10' dia., 7' face, 1—600 H.P., 96" dia., 116" face, 1—120" dia, 120" face, with 500 H.P. motor. All 3 phase, 60 cycle, 2300 volt.

LOCOMOTIVES: 1—Lima 80 ton, steam, 6 wheel, Switcher with tender, thoroughly modern, excellent condition. Sale or rent. 2—80 ton, standard gauge, Electric, 600 volt, D.C., dual controls, collecting device, powered with four 25 H.P. motors, air operated pantograph, thoroughly modern, new condition.

COMPLETE SAND & GRAVEL PLANT: Including 12" electric Dredge, with cutter, bins, scale, pipe, etc. Send for complete inventory.

SCREENS: Robins, Link-Belt, Simplicity, Nordberg, Tolmuth, Traylor, all sizes.

SCRAPER: LeTourneau 6 yd. model J8, 8 yd. capacity heaped; two tires, front; four rear, size 10 x 20.

SHOVEL: Bucyrus Erie 120-B, 5 yd. capacity, 4 yd. manganese rock dipper, Ward Leonard control equipment, 3 phase, 60 cycle, 2300 volt.

TRACTORS: Model 75, diesel, Caterpillar, serial 2E972, with motor B82R, LePlante-Choate Bulldozer model R8C; LeTourneau power control unit. Lynn 20 ton, 6 cylinder, Hercules engine, rear dump, steel and wood body.

TRANSIT MIX TRUCKS: 4—International 10 wheel with Jaeger 2 1/2-3 yd. Mixers, Hercules powered. 1—International 10 wheel with Jaeger 3 1/2-4 yd. mixer.

2—Federal 10 wheel with Jaeger 4 yd. mixers, both 1941.

4—Mack model EQSW, 10 wheel, dual Timken drive, with 4 yd. Jaeger or Rex, Hercules powered, Mixers.

1—Jaeger 2 1/2-3 yd. Mixer, Hercules powered; unmounted.

CONCRETE MIXER: Ransome 3 1/2 yd. capacity on skids, with 60 H.P., 230 volt, A.C. motor and control.

PUMPCRETE MACHINE: Model 190, Waukesha 40 H.P. gas motor, sub hopper, with tools, valves, fittings and 500' pipe; rebuilt.

CRANE: Lima 13 ton capacity, 45' boom, powered with 85 H.P., D8800 diesel motor.

OVERHEAD ELECTRIC CRANE: Shepard 7 1/2 ton, four motor, bucket operating, 36' span, 550 volt, D.C., cage control.

TRUCK SCALE: Fairbanks, 48,000 lbs. capacity, with 9' x 24' platform.

A. J. O'NEILL

Lansdowne Theatre Building
LANSDOWNE, PA.

Phila. Phones: Madison 8300-8301

FOR SALE

LIQUIDATION!

- 1—Allis Chalmers 9' x 70' Rotary Kiln, 1/2" shell
- 1—9' x 65' Rotary Kiln, 1/2" shell
- 1—6' x 60' Rotary Dryer, 1/2" shell
- 1—Ruggles Cole 6' x 45' Rotary Dryer
- 2—4' x 20' Rotary Dryers
- 1—Raymond 5 Roll Mill, with 50 and 70 hp motors
- 1—Allis Chalmers Jaw Crusher, 10" x 20"
- 1—16" Trough Belt Conveyor, 175'
- 6—Oliver Top Feed 8' x 6' continuous de-waterers
- 3—Hardinge Mills, 4 1/2' x 24", 4 1/2' x 16", 2' x 8"
- 800 hp of Motors, 10 to 150 hp, 3/60/440 volt, with starters

Partial List Only

WIRE, PHONE, WRITE for Full Details

BRILL EQUIPMENT COMPANY
225 West 34th Street
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LOADLUGGERS

& DEMPSTER DUMPSTERS

I am loaded down with both; more than fifty hoists and several hundred buckets. Located in Minnesota, Michigan, Illinois, North Carolina, Tennessee, Georgia, Alabama and Florida. Equipment is virtually new and inspection is unnecessary as I will ship subject trial and approval before payment, saving you approximately half of new price.

What else do you need?

SAM SMITH, Machinery
Marianna, Fla. Phone 438

- 1 Heavy Duty Osgood—3/4 Steam shovel No. 1228.

NORTHWOOD STONE COMPANY
BELLEFONTAINE, OHIO

TANK FOR SALE

100 tons capacity supported by four steel columns with discharge gate 9 feet from grade level. Includes skip hoist in enclosed tower which can be easily changed to continuous elevator. Heavily built and in excellent condition.

G. & W. H. CORSON, INC.
PLYMOUTH MEETING, PA.

HERE TODAY? 325-30 K. W.—50 K. W. PORTABLE DIESEL GENERATOR SETS



INTERNATIONAL UD-14—UD-18
BRAND NEW—SPOT DELIVERY
RADIATOR COOLED—SKID MOUNTED
FULLY ENCLOSED
60 CYCLE 127/220 VOLT 50 CYCLE 230/400 VOLT
BARGAIN
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Traylor Blake Type A Jaw Crusher 24x36" with Belt & Continuous Bucket Elevator 45' centers 24x10' buckets & 15 HP 220 volt motor
Superior No. 6 Gyratory Fine Reduction Crusher
Allis C Gates No. 6 Gyratory Crusher
Allis C Type B Reduction Gyratory Crusher
Austin No. 7 1/2 Gyratory Crusher
McLanahan & S 18x24" S&L Roll Crusher
5—Allis C 36x18" Dbl Roll Crushers
Allis C Superior 54x24" Dbl Roll Crusher
2—Allis C Rod Mills 3x8' Motor driven
1/2 yard P & H Crawler shovel
1 Yard P & H Crane Dragline
Barber-Greene & Nelson Bucket Loaders
75 to 300 HP Fairbanks Diesel Engines
7—10 Yd. Euclid Diesel Dump Trucks
Boyd "Special" 6 mold Brick Press, feeder

MID-CONTINENT EQUIPMENT CO.

710 Eastgate Pa 2290 St. Louis 5, Mo.

FOR SALE

- 1—McCully Gyratory Crusher No. 9.
- 1—Jeffrey Swing Hammer Mill No. 1439, 36x24.
- 1—5 Ton Plymouth Gasoline Locomotive, Model 2 FL, 48" Gauge.
- 1—Lidgerwood Electric 2 drum hoist, rope speed 300 FPM.
- 1—Sturtevant Blower Fan No. 7.
- 1—Sturtevant Fan No. 266698—Size 85—Design No. 5.

THE J. E. BAKER CO.
York, Pennsylvania

FEEDER

Six foot centers
Flight Strips, 30" wide (with extra new heavy duty flight strips.)
22" clear feed
Hopper, sprockets and chain in good condition.
Price \$250.00
F.O.B., your truck.

BLUE ROCK, INCORPORATED
P. O. Box 110, Washington C. H., Ohio

Winther Truck Crane, Individually Powered, mounted on 3 ton Winther Truck. Loads and radius of boom:—
4500 lbs. at 26 ft. Radius
5565 lbs. at 17 ft. Radius
7637 lbs. at 13 ft. Radius—PRICE \$2,000
2 1/2—3 yd. Jaeger Truck Mixers, low discharge, 1946 models powered by Hercules Motors mounted on 5 ton Whites 1926 models. 10.50 x 24 Dual tires, very good condition. \$2,150.00 each.
HERBERTSON SAND & GRAVEL CO.
2800 So. River Drive Littleton, Colo.

CRUSHING EQUIPMENT

- 1—Pulverizing Unit, Williams "G," 140 HP Buda Power, Screen, Under Conveyor, Apron Feeder. SOLIDS.
- 1—Cedarapids "1824" RB Jaw Crusher
- 1—Cedarapids 1836 RB Jaw Crusher
- 1—Universal 2036 RB Jaw Crusher
- 1—Gilson "15" Pulverizer Plant w/ power, etc.
- 1—Primary Crusher w/ 1236 Jaw, power unit, 3-axis chassis, w/ under conveyor, cheap
- 1—Atlas 24"x60" NEW Portable conveyor
- 1—Atlas 18"x60" NEW Portable conveyor
- 1—Eagle Bucket Loader. NEW
- 1—Vibrating Screen, 3"x8", NEW
- 1—Universal 36"x35" Vibrating Screen, Used
- 1—Universal 30' Bucket elevator line
- 2—Bin, 21 yd. Jack-Lex, NEW

SHOVELS AND CRANES

- 1—Link-Belt "K-44" 1 1/2 yd. Shovel-Drag
- 1—Osgood 1-4 yd. shovel, w/ crane boom
- 1—General 1/2 yd. Shovel-Drag
- 1—Speeder "B-1" 1/2 yd. Shovel-Drag
- 1—Sargent "22" 1/2 yd. Dragline
- 1—Universal 1/2 yd. truck crane
- 1-1/2 yd. Truck Crane 3-axis truck
- 10—New and Used Clam and Drag Buckets

POWER UNITS

- 2—Minneapolis-Moline 88 HP gas power units. NEW
- 1—Minneapolis-Moline 28 HP Power Unit, NEW
- 1—Minneapolis-Moline 26 HP Power Unit, NEW
- 1—Minneapolis-Moline 250 HP Used Power Unit
- 1—LeRot 12 HP 4 cylinder Power Unit, Reconditioned
- 1—Waukesha-Hesselman 46 HP new engine
- 10—Briggs & Stratton 6 HP gas engines, NEW

AIR EQUIPMENT

- 1—Schramm "105" Port. Compressor
- 1—Davey "105D" Port. Compressor
- 1—Davey "315D" Port. Compressor
- 2—Davey "210D" New Compressors
- 1—Cleveland "Dit-30" New Wagon Drill
- 2—Wayne 7 cu. ft. new shop compressors
- 2—Wayne 2.2 cu. ft. new shop compressors
- 1—Wayne 20 cu. ft. New shop compressor

MISCELLANEOUS

- 1—Highway Cinder Spreader, NEW
- 1—Kohler 1500-Watt Lite Plant, NEW
- 1—Homestead "JMI" New Hypressure Jenny

EIGHTHY EQUIPMENT COMPANY
526 W. State St., Rockford, Illinois

For Sale—

SHASTA DAM SAND AND GRAVEL PLANT EQUIPMENT

Including—

GOODYEAR 36" SPECIAL-MAKE BELTING FROM 10-MILE CONVEYOR

16,000' of Belt Remaining With Idlers, Pulleys, and Drives

ALSO—

Electric Motors, Line Equipment, Transformers and Supplies
Pendulum Boom 42" Belt Conveyors, 100' and 200'
Merrick Feedweights and Weighometers
Dorr Hydroseparator, 20"x4'
Marcy Rod Mill, 8"x12"
Vibrating Screens
Trestle and Tripper
Dorr Rake and Bowl Classifiers
Gravel Washer; Extra-heavy Blade Mill
Pumps; Centrifugal, Deep-wall, Steam, Dredge
Auxiliary Equipment: Chain Hoists, Winches, Welding Machines, etc.

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ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your inquiries.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

GENERATOR SET

Crocker Wheeler Company Style Z-51 Type —C.M. 230 Vt. 127 Amp. V-Belt driven with 40 H.P. 220 Vt. 3 phase 60 cycle Allis Chalmers induction motor.

HAYES QUARRIES
335 Railway Exchange Bldg.
Kansas City 8, Mo.

FOR SALE

NEW CONVEYOR BELTING IN STOCK

500' Quaker 16" 4-Ply, 28 oz.
300' Quaker 18" 5-Ply, 32 oz.
520' Quaker 20" 4-Ply, 28 oz.
490' Quaker 20" 5-Ply, 28 oz.
400' Quaker 24" 4-Ply, 28 oz.
150' Quaker 36" 6-Ply, 28 oz.

Conveyor belting delivery from the factory is still tough. Better anticipate your requirements now—troughing rolls, head and tail pulleys, etc., now in stock.

EIGHMY EQUIPMENT COMPANY
526 W. State Street Rockford, Illinois

FOR SALE

1-3 ton per hour Kunts Hydrator
1-5 ton per hour Kunts Hydrator
Each replaced for larger sizes. These are rebuilt and 100% efficient—00% new.
1-3 ton per hour Clyde Batch Hydrator
1-6 ton per hour Clyde Continuous Hydrator
We have a number of lime feeders and a number of hydrate feeders.
1-2 1/2 yard size dump car 30" gauge track. Track gauge can be made to suit.
1-Portable Ingersoll Rand Air Compressor—315 cu. ft. per minute. Waukesha engine. First class condition—ready for use.
One complete Lime Hydrating Plant, including buildings.
One 212 Gallon Road Grader 12" Blade—Excellent condition.

Lime & Hydrate Plants Co.
50 S. Beaver Street, York, Pennsylvania

Bonded Scales, Vibrating Screens, Crushers

20 ton, 24'x10' Truck Scale.....\$575.00
20 ton, 34'x10' Truck Scale.....\$815.00
30 ton, 34'x10' Truck Scale.....\$1040.00
Batching Scales all sizes and capacities
3'x6'-1 deck Vibrating Screen....\$495.00
3'x8'-2 deck Vibrating Screen....\$685.00
3'x8'-3 deck Vibrating Screen....\$885.00
Cinder Crusher\$345.00
Large Cinder Crusher.....\$795.00

Immediate Delivery

BONDED SCALE COMPANY
128 BELLVIEW, COLUMBUS 7, OHIO

14 ft. dia. rubbing bed for sale. Complete and in excellent running order. Plate has recently been planed. \$500.00 f.o.b. plant, Westmont, N. J.

W. N. RUSSELL & CO.
WESTMONT, NEW JERSEY

EQUIPMENT WANTED

WANTED

Approximately 10 tons Steel Grinding Balls 1 1/4" to 2".

RIVERTON LIME & STONE CO.
Riverton, Va.

WANTED

Cement Block making machinery, give full particulars and price.

B. SAFIONOW
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FOR SALE

Ford Thornton Tandem with 8 yd. dump bed—\$25 x 20 tires—perfect condition in every way. This was built up in June, 1945.

JOE BOUGHTON
Tel. CO. 2590—R. R. 17, Box 490
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PLANT FOR SALE

FOR SALE

ALL OR HALF INTEREST IN . . .

Block plant complete with Steam Kiln—New Vibrator Machine, capacity 1,000 8x8x16—2,000 4x8x16 daily. Attachments for specials. Mixer—Skip Hoist—Steel Racks—Steam Boiler New Stoker—Lift Truck—and all other necessary equipment needed for small modern plant. Good Kentucky town 8,500 population. Plant may be seen in operation. Plenty of orders. Long lease on building and yard.

Will consider selling all, but prefer selling half interest to experienced sober man capable of assuming complete management. References exchanged. Write Box D-37, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

FOR SALE

Block Plant consisting of:

2 J. W. Apple, Little Giant Block Machines, 2,000 capacity per day.
Facilities for garden furniture (molds). Additional lines such as Septic Tanks, Clothes Line Posts, Flagstones, Porch Steps, etc.
1-1946 Dodge Platform Truck (Steel Body).
1-1937 Ford Dump Truck.
1-1935 International Truck with special Hoist Equipment for Septic Tanks.
Railroad Siding. (5 car).
Land 200'x135.

Price \$32,000—1/2 Cash—Terms.
Independent Concrete Products
Orange & S.A.L. R.R.
Sarasota, Florida

CONCRETE PRODUCTS PLANT FOR SALE

Owner retiring, will sell going business in Central Illinois city of 70,000. Redi-mixed batching plant with six high dump mixer trucks. Two block machines. Pipe machine manufacturing 12" to 36" culvert pipe. Joist machines, chimney block machine and numerous other equipment. Would consider separating.

Write Box D-42, c/o ROCK PRODUCTS
309 W. Jackson Blvd., Chicago 6, Illinois

NEW LIME DUST PLANT

We offer a high capacity complete portable outfit, six months old or less (except shovel). Lease can be assigned. Located northern Illinois. Good reason for selling. Immediate possession. Requires \$70,000 investment. Terms can be arranged.

EIGHMY EQUIPMENT COMPANY
526 W. State Street Rockford, Illinois

FOR SALE

A two-kiln lime plant with complete hydrating equipment. High grade lime stone. Located in Southern Minnesota.

FOWLER & PAY
MANKATO, MINNESOTA

QUARRIES FOR SALE

FOR SALE LIMESTONE QUARRY

17 1/2 acres with machinery. Excellent location in Northern Ohio.

MRS. S. A. SWINT
104 Sherman Ave. Mansfield, Ohio

FOR SALE

Asphaltic Limestone Quarry located at Hillsboro, Ohio, complete with all equipment for operating. Price \$19,500 cash. Slightly higher if terms are desired. This an excellent opportunity for young men with sales ability.

ROBERT TOTTERDALE
P. O. Box 1699 Delray Beach, Florida

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MINERAL COLORS

for
**BRICK MORTAR
STUCCO — PLASTER**
"FINE BECAUSE OF THEIR FINENESS"
Ask for samples and recommendations
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

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HORACE J. HALLOWELL

Analytical and Consulting Chemist
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Specialty—The Chemical Analyses of Carbonate, Phosphate and Silicate Rocks and Mineral Products.

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CORE DRILLING ANYWHERE

We look into the earth
PENNSYLVANIA
DRILLING COMPANY
Pittsburgh, Pa.

H. D. RUHM

Consulting Engineer

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W. R. BENDY

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**CEMENT PLANT
MODERNIZATION DESIGN
OPERATION**

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Crushing Plants

Cement Plants

Storage Methods

Operating Costs

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Phone 1828

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Plant Layout

Design

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Construction

POSITIONS VACANT

WANTED SUPERINTENDENT

Capable, experienced, young man to handle production and maintenance in year-round ag-stone and crushed stone operation in Southern Indiana. Reply, giving age, education, experience, and salary expected in first letter. Our people know about this ad. Write Box D-39, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

CHEMIST, training in colloid or physical chemistry, especially surface phenomena; some experience with portland cement desirable but not essential; for position in research laboratory. Give complete details and salary desired. Write Box D-45, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

WANTED—Cement Plant Superintendent with engineering education and experience. Location northeastern section of United States. In applying, give education, positions held, age, marital status, salary expected, etc. Write Box D-38, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

RICH GYPSUM DEPOSIT AVAILABLE

Deposit at Coahuila, Mexico, 7 miles long; 4 miles wide, about 40 feet thick. 100 miles from Texas border, 4 miles from railroad, 10 miles from main highway. For complete information contact

C. M. GALINDO

Box 435 Eagle Pass, Texas

ATTENTION—WANTED

Latest Improvements in Exterior Finishing. Permanent, Dry Ready Mix Aggregate in one or various colors could use financial backing. Write for details.

K. M. PREIS

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MORE PROFITS FOR YOUR COMPANY LESS WORRY AND EXPENSE FOR YOU

TO sell your business for cash to a reputable and experienced operating concern with substantial capital may be the best thing for both the company and you.

WE are principals (not brokers) with a record of successful operating experience. Present company personnel retained wherever possible.

• ALL discussions and negotiations strictly confidential.

BOX 1209; 1474 BROADWAY; NEW YORK 18, N. Y.

WANTED PLANT SUPERINTENDENT

Familiar with pipe, block or any special concrete product. Must have at least high school education, be mechanically inclined and have pleasing personality. Age limit 48. Post-war opportunity with large concern branching out into full line of products in various sections of the United States and operating on an incentive profit sharing plan. Past record must stand rigid inspection. Include photograph in reply. Write Box C-62, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

SERVICE ENGINEER WANTED

Eastern Cement Manufacturer has an opening for a Service Engineer in the Technical Department. Should be graduate civil engineer, and have basic knowledge of design of concrete mixtures. Work will consist of sales promotional work in connection with use of portland cement, masonry cement and high-early-strength cement. Applicant should have sales ability and have necessary qualifications as to appearance.

Write Box D-47, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

SUPERINTENDENT WANTED

Portland cement manufacturer has opening for Plant Superintendent. Permanent position with old established company. Our own people know of this ad. In replying give age, education, experience, salary requirements and references.

Write Box C-77, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

WANTED: Engineering assistant, college graduate, with two years' drafting room experience, preferably in cement plant. Must have good personality and be free to travel.

W. R. BENDY

312 Times Bldg. Long Beach, Calif.

WANTED—Experienced man to take complete charge of production in concrete products plant near New York employing 30 workers. Give full particulars of experience, age, education and salary. Write Box D-44, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

POSITIONS WANTED

POSITION WANTED—By Engineer: member A.I.M.M.E. as Superintendent of Operations with producer of crushed stone. Experienced in quarrying, mining, milling operations. Seeking connection where years of training can be used for mutual profit. Can furnish highest references as to character, habits and ability. Available immediately. Prefer East. Draft exempt. Write Box D-46, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

CHIEF-POWER-PLANT AND ELECTRICAL ENG. Technical trained, twenty-five years in power generation (Steam Turbines) distribution and maintenance. Employed Cement plant. Desires change. South, West, or West Coast. Write Box D-25 C/O Rock Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

CEMENT FACTORIES—Mechanical Engineer desires employment as Chief-Engineer or Supervisor. Many years' work in leading position. Wide experience in production, lay-out, and construction of plants. Write Box D-40, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

POSITION WANTED—Rock Plant, Quarry and Hot Plant Supt. Twenty years experience with either portable or stationary plants, desire connection with good company, overseas or in States. Can handle wet or dry plants. Write Box C-64, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

CHEMIST—22 years' experience in the cement industry. Wet and dry process. Also research. Capable of supervision. Now employed at this type of work. Write Box D-41, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

CHIEF CHEMIST—twenty years' experience in Portland Cement Industry wishes to locate on west coast in modern cement company or partnership in research laboratory. Write Box C-95, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Illinois.

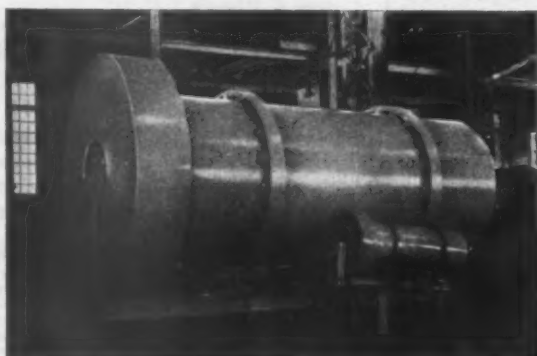
CHEMIST with 13½ years in cement industry desires position as CEMENT MILL CHEMIST. Just released from NAVY and will accept position immediately. Write Box D-26, c/o Rock Products, 309 West Jackson Blvd., Chicago 6, Ill.

POSITION WANTED as Plant Supt. for Concrete Products, Ready Mix, Sand, Gravel, Crushing, Pulverizing Operation. 25 years' experience, in States or Overseas. Write Box D-48, c/o Rock Products, 309 W. Jackson Blvd., Chicago 6, Ill.

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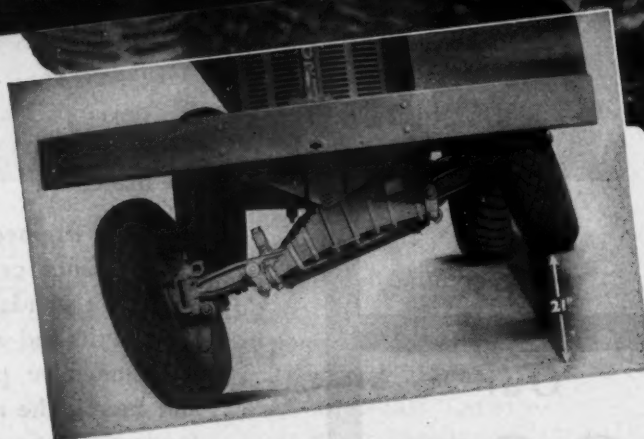
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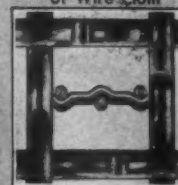
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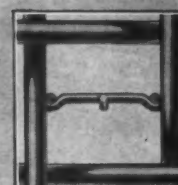
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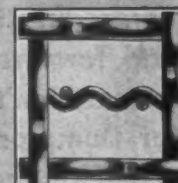
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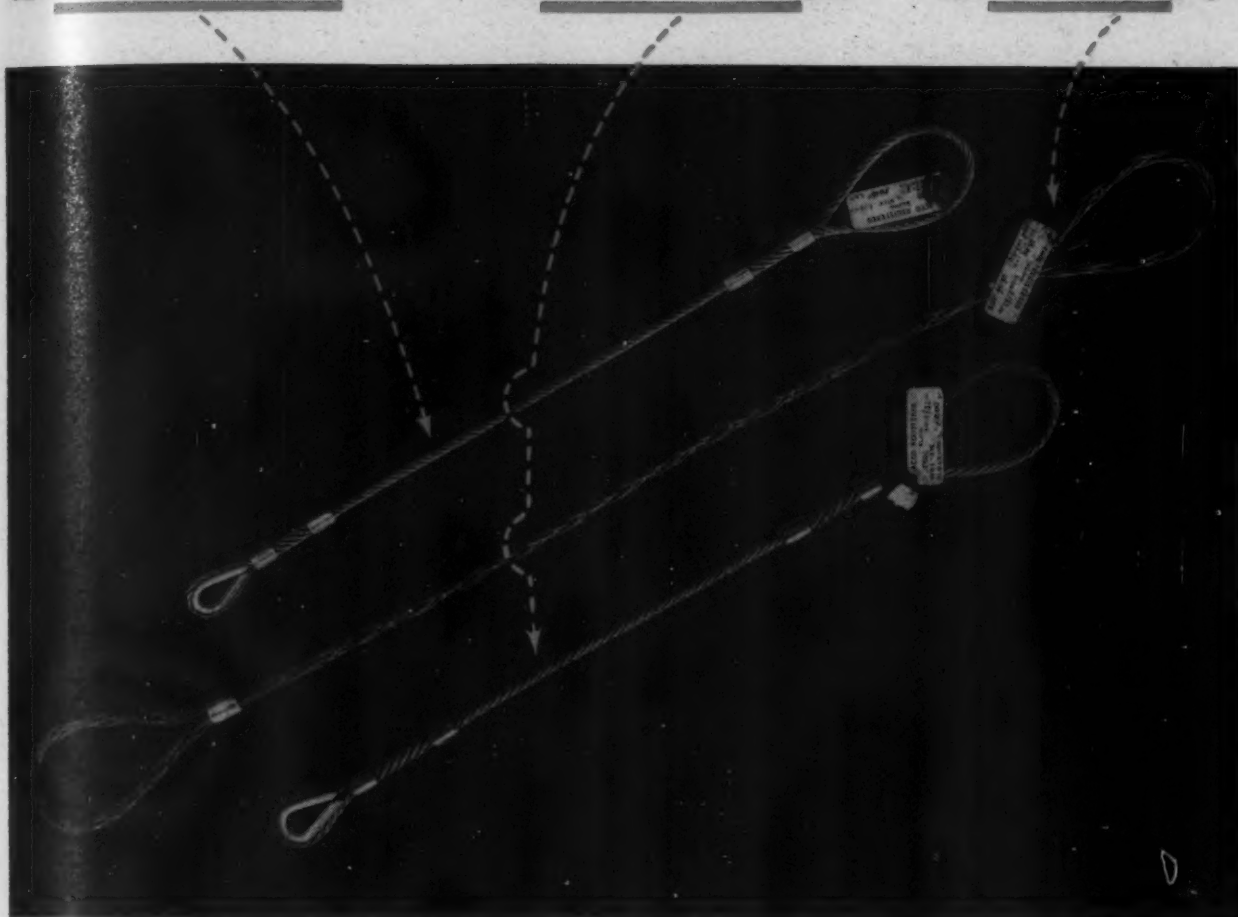


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